

“Food Not Lawns”
Addressing the Costs and Benefits of Converting a Backyard
Lawn into a Vegetable Garden - Los Angeles, California



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In Partial fulfillment of a Bachelor of Arts Degree

Environmental Program
University of Vermont
2010

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Abstract

As home vegetable gardening is on the rise, there is no better time to help the consumer know the economic benefit of converting a grass yard to an urban vegetable garden. Historically, urban vegetable gardening was an important factor for the livelihoods of many civilizations. It provided them with food security and extra money during times of hardships and famine. Furthermore there is a trend associated with vegetable gardening that states when the economy is weak and food prices are on the rise, like today, home-scale vegetable gardening popularity rises as a means of saving money and providing an extra food source.

For this project the costs and benefits of having a backyard vegetable garden were determined. The costs was calculated for garden start-up and maintenance to produce food and compared with the cost to purchase an equivalent food quantity from a grocery store. The cost-benefit analysis was based on the food usage of a typical family size of 5 and the urban garden replacing a grass lawn. If the cost-benefit analysis reveals a significant savings to families, it could have a profound impact on people's decisions to have backyard vegetable gardens in Los Angeles, California. Not only would families save money, but the spread of urban vegetable gardens might impact the carbon footprint of communities (as fewer transport vehicles may be needed to bring produce to grocery stores) and enhance the health of the community members. The current project provides a first look at methods to minimize cost and maximize yield of converting a grass yard to an urban vegetable garden and provide a comparison of the food yield to costs generated from traditional grocery shopping. As well as calculating the monetary costs and benefits

to having a garden, the project also addressed the social implications brought on by such a project.

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Introduction and Overview

Purpose of the Study

I have prepared a project-based thesis where I created an organic backyard vegetable garden in place of an existing lawn at my home in Los Angeles, California. This project is a case study assessing the costs and benefits of food production in an urban vegetable garden versus the equivalent yield through traditional grocery store shopping for a hypothetical family of 5. It also addresses some of the social and cultural benefits associated with backyard gardens. The specific hypothesis I've tested is that an urban vegetable garden of small to moderate size designed to maximize food production provides a significant financial savings to families as well as providing them with an engaging, tranquil, and beautiful landscape. The case study provides a model for estimating the net benefits of urban vegetable garden instead of traditional grass yards in terms of real economic savings.

Scope, Background, and Significance of the Problem

In Los Angeles, California, a city that experiences excellent growing conditions, many citizens have backyards and grass lawns. Furthermore, due to the economic downturn our country is experiencing, food prices are on the rise and there is an ever-expanding interest in homegrown agriculture as a means of saving money. Despite the interest in urban vegetable gardens and healthy food and many books devoted to the subject of urban agriculture, there are few case studies that aid the consumer in making individual decisions regarding home food-source gardens by directly addressing the economic value of turning a backyard (or portion thereof) into a place for growing food.

This project addresses the economic impact of creating an organic vegetable garden in a backyard.

The garden is designed to maximize food production given a fixed square footage of land. Using quantitative and qualitative methods, the project sought to address questions such as:

1. What percent of a family's annual produce needs can be met by an organic backyard garden of medium size?
2. What is the initial investment of such a project and what are the ongoing maintenance costs?
3. What is the equivalent cost of similar produce quantities if purchased at a local supermarket?
4. What is the cost-benefit of the urban vegetable garden vs. supermarket shopping?
5. What other, non-monetary, values does such a project bring?

Results of this case study might be useful for estimating cost/benefit ratios for urban vegetable gardens of varying size typical of backyards in Los Angeles. I hope the study will be included in the current literature on the topic as a means of evaluating the economic viability of producing vegetables at home, for a family of five.

Review of Literature

Introduction

The following literature review is broken into three sections. These three sections are: the Social and Cultural aspects associated with gardening, Gardening in Los Angeles, California, and sustainable methods of preparing a backyard garden and homestead.

Within the first section I explore the history and future of gardening as a whole and in respect to America, the social aspects of War Gardens, the reasons why the majority of Americans have lawns in their back and front yard rather than gardens, and some of the potential benefits and risks associated with urban gardening. The second section is devoted to understanding the specific climate in which Los Angeles is located, and it looks at some themes and examples of current gardening, and landscaping, projects in the area. The final section of the literature review looks at two different approaches to sustainable gardening; biointensive practices and permaculture practice, and within those some of the techniques used in these practices, such as double-digging, composting, and companion planting.

I. Historical, Social & Cultural aspects of Gardening

1.1 Early Forms of Gardening

Urban gardening, a field that has gained much attention in the past few years, is a localized adaptation to traditional gardening, which has very deep roots in history and can be stretched back as far as to the Native Americans (Hinrichs, 2003; Tucker, 1993).

Gardening began during the time when hunter-gatherers walked the land, around ten thousand years ago. Although we do not know the exact reasons people began gardening, civilization as we know it today would not exist if it weren't for people's reliance on agriculture (Tucker, 1993).

Some of the first documents on vegetable gardening come from ancient Rome and Pompeii gardens. These gardens used surprisingly many of the same vegetables and herbs still grown today, such as turnips, onions, basil, dill, and mint (Leach, 1987).

Although much is known about ancient Roman gardens, the oldest surviving plan for a kitchen garden comes from the medicinal herb gardens of the cloisters of St. Gall in Switzerland and Reichenau in Germany that date back to the early 800's A.D (Weaver, 1997). Kitchen gardens are defined as sites for producing vegetables and food for human consumption (Leach, 1982). These gardens were designed in rectangular plots using specialized beds for growing specific vegetables, where each bed was designated for a single type of vegetable; furthermore, they were arranged very similarly to how the Romans designed their garden beds. It has been determined that these gardens were probably the missing link connecting ancient Roman gardening practices with those of modern Europe and today (Leach, 1987; Weaver, 1997). It is thought that this style of

gardening became the model for all kitchen gardens in Europe. From the Middle Ages through the nineteenth century, kitchen gardens laid out in quadrants with raised beds were the fundamental means of feeding the household (Weaver, 1997).

One of the civilizations who wrote extensively on the subject of gardening, and who demonstrated to an extent, self-sufficient urban gardening, were the people of the Ming Dynasty in China (Pennington, 2002). The Ming Dynasty, which lasted from 1368-1644, documented extensively their practice of vegetable gardening, formerly referred to as kitchen gardening. At first vegetable gardening was only for the literati (elite scholars and bureaucrats) as means to retreat from the chaos of government affairs, although it later became popularized among the masses (Pennington, 2002). The vegetable gardens during this time were located next to the house in rectangular plots called ‘qi’ (Pennington, 2002). Maintaining proper qi was essential to food-security during this period, as some scholars were able to become completely self-reliant thanks to their gardens. Although these areas were not densely populated, as we find today, they still provided a place where communities lived, where each household had a kitchen garden, demonstrating an early example of urban gardens.

1.2 English Gardens

While early examples of gardening come from ancient Rome, China, and Europe, seventeenth century English gardens are very important as they provided the foundation for gardening in the United States (Pennington, 2002; Tucker, 1993). English women who gardened in the 1600’s mainly practiced the art of kitchen gardening. It was the woman’s job to maintain the garden, and it was such an important job that it even went so far as to become part of her marriage vows (Tucker, 1993.) During this time the women

would plant ‘herbs’, which was the term used to describe both food grown in the garden, vegetables and fruits, as well as medicines and seasonings. These gardens were designed with raised beds on rectangular plots and located next to the home as close to the kitchen as possible, providing a convenient location for the garden. These traditional European gardens, as they were called, were the template for gardening in the United States once brought over by the pilgrims in the seventeenth century (Pennington, 2002; Tucker, 1993.)

1.3 American Gardens

Contemporary American gardening began during the seventeenth century when it was brought over by English maids and pilgrims trying to start a new life in America. These women longed for a sense of familiarity in the new world and to cope, they created gardens in the same style as they had been in Europe (Tucker, 1993; Weaver, 1997). Along with gardening, it was the gardener’s job to be a master at preserving the crops, and so root cellars were constructed all across New England during this time (Tucker, 1993). While the British brought the new advent of gardening to America, they also brought along some of their new ideologies associated with gardening. In Europe a distinction between vegetable gardening and ornamental gardening was well under way by the seventeenth century, and vegetable gardens were seen as being unsightly and without beauty (Pennington, 2002).

By the mid eighteenth century, there was an increasingly wide aesthetic gap between vegetable gardens and formal gardens when designing landscapes. While previously vegetable gardens had been seen as beautiful, now they were becoming increasingly displaced out of most landscape designers’ ideals. As this distinction grew

proponents of vegetable gardens began trying to create vegetable gardens that could compete with the beauty of ornamental gardens. These gardens were known as *ferme ornee*, which literally translates to ornamental farm. The goal was to produce beautiful elaborate landscapes while maintaining the functions of vegetable gardening. Although to much dismay these gardens never took off. In fact, ornamental gardening out-competed vegetable gardening in the landscape (Pennington, 2002).

During the time gardening was becoming popularized in America, these paradigms were brought over and vegetable gardens in the U.S. were installed not to be seen from the kitchen view. Therefore, for the first time, kitchen-gardens moved from being right out in the front of the house, where produce could be easily managed and used, to “out of sight to the rear or far side of the better home” (Pennington: p. 33) This became the trend in gardening for the next few centuries until the early nineteenth-hundreds, when World War One brought gardening back into the focal point of the home, as it became a patriotic duty of all Americans (Pennington, 2002; Tucker, 1993).

1.4 War Gardens in America

Throughout America’s history there have only been two eras where vegetable gardening became a topic of national conversation. During World War One and World War Two the United States government celebrated vegetable gardening as being patriotic, in a means to help the war effort (Pennington, 2002; Miller, 2003) Posters, newspapers and magazine articles, cartoons, radio shows, clubs, and community programs advertised home gardening as an Americans duty. During these war eras, food prices rose to astronomical levels. One example of this comes in February, 1917, when the price of cabbage rose by two thousand percent! Increased food prices lead to food shortages,

which were finally addressed by President Wilson when he called upon all Americans to plant vegetable gardens, as a means to supply themselves with cheap healthy, fresh food (Pennington, 2002.) The following year *Garden Magazine* published an article entitled “Make your War Garden Attractive,” noting that the previous summer every available space of land was turned into a garden. It was of such importance that the government created a National War Garden Commission whose primary duty was to recruit and educate gardeners (Miller, 2003). These home vegetable gardens were referred to as “War Gardens” and, after the war ceased, they continued to be promoted under the title of Victory Gardens. By the end of the war vegetable gardening had become very popular due to the nation’s economic disaster. Although, shortly after, as the economy strengthened, the popularity of vegetable gardening died out (Pennington, 2002; Miller, 2003).

After World War One came the “roaring twenties” that are readily identified by the advancements in transportation and food preservation. These scientific advancements created a strengthened economy and better food security. With these advancements in place, the vegetable gardens of the previous decade dwindled into the “background of American horticulture” until WWII broke out in the 40’s (Pennington, 2002: p. 59).

Shortly after the bombing of Pearl Harbor, citizens all across America picked up their gardening supplies and began to do what they believed helped contribute to the war efforts, as it had done twenty years earlier. Even before the government began advertising and promoting Victory Gardens, people had begun digging up the soil,

anticipating a food crisis. Though unlike war gardens during World War One, Victory Gardens during World War Two became well established through a desire to be patriotic; therefore, the development of a national gardening commission was not necessary (Pennington, 2002; Miller, 2003). During this time gardening classes were in high demand and by 1943, when food rationing began, home gardening was already extremely popular and could not be stopped (Pennington, 2002). Similar to World War One, gardening during these years had become so popular, for it was so beneficial, that all across the country, abandoned lots, schoolyards, backyards and anywhere with a little bit of land was once again put into production. City and rural people alike were taking a stand in gardening and by 1942 there were twenty million small-scale gardens throughout America (Pennington, 2002; Miller, 2003). During this period homegrown vegetables accounted for nearly half of all of American's vegetable consumption (Hayden-Smith, 2009). After World War Two vegetable gardening again dwindled into the history books, maybe as a result of the Cold War, a rebound economy, or people moving to suburbia, and Americans became more concerned with having patios, manicured lawns, and neat flower beds which became ingrained into the image of suburbia as we know it today (Grampp, 2008; Pennington, 2002).

1.5 From Gardens to Lawns

After World War Two ended, millions of service men returned to America with a dream of starting a new home and a family. Although lawns can be dated back to as early as the sixteen hundreds in England, the modern yard is a product of an influx of people, homes, technology and suburbia (Stienberg, 2006). The combination of a war-revived economy, government-sponsored financial incentives, and a high demand for

houses created an enormous real state boom that resulted in modern day suburbia. Along with an influx of homes, families and neighborhoods transformed the purpose of a backyard to have a new meaning in which it became a family room. No longer was the backyard just an area of land used for gardening, drying clothes, and accumulating junk; it had now become a central theme to a household where families could relax, play games, and even dine, creating a recreational and leisure use of the area (Grampp, 2008).

Along with the new concept of a backyard's function as a room for family leisure and play, advances in technologies helped spur the creation of the common lawn. Before the 1940's, having a lawn was not popular, as it was a very painstaking and time-consuming process that involved both seeding and sodding the ground. The invention of the sod-kicker completely transformed the nation's backyards as they made it possible to cut out large mats of turf that could be purchased and rolled out, transforming any barren land into a lush full grass lawn. After the invention of the sod-kicker, sod farming began to take hold (Grampp, 2008). In its early stages purchasing sod for a lawn indulged a wealthy clientele that was unwilling to wait for a seeded lawn to come in, but by the mid-sixties there were over a hundred and fifty sod-farms across the U.S (Steinberg, 2004). With the advent of the sod farming industry came an increased popularity of lawns as it was cheaper, easier, and less time consuming to roll out an entire front or back yard than it took to carpet a house (Grampp, 2008). Therefore with a rising real-estate industry, a re-creation of the backyard, and increased technologies, lawns quickly became part of the American Dream, which can be demonstrated through the ninety-eight million lawn mowers owned by Americans by the mid 1990's (Grampp, 2008; Steinburg, 2004).

The lawn, suburbs, and a strong economy took a toll on home scale vegetable gardening after the war years and as modern science progressed, and new synthetic chemicals for increasing production were created, the food systems shifted drastically (Grampp, 2008; Pollen, 2008). While growing and eating whole foods became a thing of the past, buying food at supermarkets and eating scientifically manufactured foods became very popular, as they were cheap and easy to get (Pollen, 2008). The story of gardening in the United States was put on hold briefly until its revitalization in the early seventies brought on by radical progressive thinking and a growing distrust of governmental practices (Tucker, 1993).

1.6 Resurgence of Gardening

For the same reason Americans always turn to gardening, during the nineteen seventies inflation caused skyrocketing food prices (Tucker, 1993). Specifically, in 1973 the Arab Oil Embargo increased inflation up to eleven percent, driving consumers to seek alternative methods of food security (NGA, 1979). In cities all across the nation, community gardening began to take shape, as a result of increased food prices, and along with it, new intensive methods of gardening were introduced. With more intensive methods of gardening, high outputs of food were being grown on relatively small plots of land (Ball, 1983; Jeavons, 2006; Tucker, 1993). Many people realized the difference community gardening operations could have on their cost of living, helping them out tremendously (Pennington, 2002).

Another motivation for the revitalization of gardening came from increasing environmental awareness and a demand to help heal the environment rather than hurt it. By the 1970's people had a good understanding that consumption patterns were harming

the environment and gardening was a way to give something back to it through “healing the earth and its soils” (Jeavons, 2006: p. xi). Gardens, unlike conventional agriculture, provided food that was a product of healthy holistic practices and therefore it was believed that by not supporting foods produced using conventional agriculture, people were helping heal the planet. Furthermore, increased knowledge on the health risks posed by the chemical industry, such as the environmental implications of spraying DDT, also led many people to want to grow their own organic, healthy foods. These factors raised many questions in peoples’ minds, and during a time in which environmental consciousness was on the rise, accompanying this idea was gardening (Tucker, 1993).

What set apart the gardening movement of the 1970’s from the previous movements throughout history was the focus on community gardening (Pennington, 2002). Furthermore, during the mid 1970’s when the country was experiencing high inflation, President Gerald Ford began the Whip Inflation Now campaign in which he urged citizens to do anything they could do to be more productive and spend less. This resulted in Whip Inflation Now Gardens that were community based garden programs aimed at producing food in order to decrease spending on food and, in turn, help ease inflation (Mieczkowski, 2005). Gardening was no longer only for producing vegetables, but it was a way in which communities and people were brought together to socialize and be active. Furthermore, community gardens designated space in which urban city people could grow their own food. They allowed people who didn’t have space or room to garden, that lived in densely populated cities, to garden once and for all. During this time peoples’ views shifted, and an essential belief held by most gardeners was that “Americans should have the right to grow some of their own food,” changing the

perceptions of gardening from being a privilege mandating it as a right (Tucker, 1993: p. 160). During this time Gardens For All was formed, in Burlington VT, to ensure that anyone who wanted to could garden. Later, Gardens for All began surveying gardeners and became a membership organization. During this time they decided to change their name to the National Gardening Association (Anderson, 2009). The National Gardening Association was the product of Gardens For All, located in Burlington VT, and was developed to survey gardeners and draw out/ verify trends in gardening.

After the creation of the National Gardening Association (NGA) previously assumed gardening trends were verified with hard evidence and data. In the 1970's the NGA reported a distinct correlation between vegetable gardening and the state of the nation. It was reported that during economic downturns coupled with rising food prices families that practiced gardening rose. This was, in fact, the case in 1975, with a weak economy, inflation on the rise, and Gerald Ford's Whip Inflation Now Campaign, when nearly half the population of the United States gardened. These trends were again verified during the 1980's when a strong economy saw the decreasing popularity of gardening. In 1975, 49% of the U.S. population practiced gardening; whereas, by 1985 only 37% of the people practiced it (Mieczkowski, 2005; NGA, 1979 & 1985). The facts supported by the NGA suggest that the number of U.S. households with a vegetable garden parallels changes in food prices, with a one to two year lag. Therefore, while gardening was most popular during the mid seventies, as a rebound from the poor economy in the early seventies, by the mid eighties gardening had become less popular once again, for the early eighties saw a strengthened economy (NGA, 1979 & 1985).

While garden popularity shrank during the 1980's and 1990's, these periods saw an increase in the amount of gardening movements that took shape (NGA, 1985; Creasy, 1982; Kourik, 1986). In the 1980's new gardening movements such as edible landscaping began to take shape. The term "edible landscape" first appeared in 1982 by the American Rosalind Creasy, in her book entitled *The Complete Book of Edible Landscaping*. Creasy popularized the new term used to explain this sort of landscaping, although one should note this style of gardening is not new as it was being practiced as far back as the 1800's under the title *ferme orne* (Creasy, 1982; Pennington, 2002). This book re-introduced the concept of using ornamental edible food plants to design a landscape for the modern American of the time. The method was seen as a sort of 2-for-1 deal, as you would get a beautiful landscape and provide yourself with food (Kourik, 1986). This book quickly became a bestseller as it took America by storm (Creasy, 2009). After Creasy came Robert Kourik who, in 1986, wrote a book entitled *Designing and Maintaining Your Edible Landscape Naturally*. Playing off Creasy's success, Kourik was able to sell over 50,000 copies worldwide, mainly in England and Australia (Kourik, 2008). This information, accompanied by NGA polls and surveys, lets us see that during a period when gardening popularity was on the decline, new movements and ideas associated with reinventing the styles of gardening were on the rise (NGA, 1985; Creasy, 1982; Kourik, 1986).

1.7 The State of the World Today

Today the world is in a very troubled time. The economy is very weak, we in a war with Afghanistan, and the health of the environment is degrading ever so rapidly.

Over the past three years average food prices (in dollars) have more than doubled and the real food price index has increased by over sixty percent (McCalla, 2009). These numbers are reflected in the most recent NGA poll in which it was calculated that seven million more households will grow their own food in 2009 than in 2008, from 36 million to 43 million, representing a 19% increase (NGA, 2009). Incentives to grow food are similar today to those in the past, as fifty-four percent of people starting gardens are doing so to save money on their food bills as well as eat better tasting foods (NGA, 2009). These numbers verify the reported NGA trends discovered some twenty to thirty years ago that still hold true today.

Other sources of information have also been important in understanding the new nature and resurgence of homegrown urban agriculture. Newspaper articles, books, and businesses state that Americans are turning to their yards into food production systems. A press release from UC Davis in July of 2008 urged Los Angeles County residents to grow their own food. Specifically the release was put out in order to help citizens reduce the money they spend on fuel and food, and in it offered free information on gardening techniques for first-time and experienced gardeners (Savio, 2008). A February 2009, article on the boom in home-scale food production stated that people in Austin, Texas, are turning their backyards into gardens mainly to have healthier, tastier, foods and in doing so reducing the yearly amount of money spent on food (Studebaker, 2009). Along with the rising popularity of mainstream media's attention given to homegrown foods, many books have been published on the subject, such as *Food Not Lawns*, a book that looks at the technical and social aspects of turning a front-lawn into a garden (Flores, 2005). The rise in garden popularity is so large today that it has led to the development

of businesses based around the subject. One such business, Homegrown Los Angeles, provides all the necessities in starting kitchen gardens as well as maintaining them on a weekly basis. Furthermore, this business has recently been critically acclaimed, drawing a lot of attention from mass media (Gelt, 2008). Lastly, It has been estimated that if only half of the current vegetable gardeners today practiced specialized intensive methods of food production, it alone would amount to enough vegetables to supply our entire nation's need for vegetables, an astonishing fact that should not be overlooked (Ball, 1983)!

1.8 Benefits and Risks Associated with Urban Agriculture

Urban Agriculture today, while practiced traditionally for hundreds of years, presents many different benefits and risks that were not of consideration a hundred years ago (Veenhuizen, 2006). The benefits of urban agriculture not only benefit the producer, but also play a role in giving back to the community and the environment (Tucker, 1993; Veenhuizen, 2006). When living in an urban setting, a lack of income translates very quickly into a lack of food, creating the problem of food insecurity. It should be noted that as oil and food prices rise, so does the issue of food insecurity. One benefit of urban agriculture is its ability to alleviate this stress. Another indirect economic benefit of urban gardening comes through the development of an urban agricultural market providing the necessary inputs for gardeners, such as composting centers and gardening supply stores (Veehuizen, 2006). This market helps generate revenue and gets money circulating within the community, benefiting the local economy.

Another factor to consider when discussing urban agriculture is health. While eating whole fresh foods translates to a healthier, more nutritious diet, food growing in

urban cities can become contaminated through a variety of means leading to potential health problems (Pollen, 2008; Veenhuizen, 2006). The main health problems associated with this are: pathogen contamination of crops resulting from dirty water or the mismanagement of crops after they are harvested; increased incidents of diseases brought on by mosquitoes and scavengers attracted to agricultural activities; and contamination of heavy metals in soils that make their way into the food being produced on these plots of land (Flores, 2005; Veehuizen, 2006). It is important to understand the risks associated with urban agriculture, before creating any urban homestead.

II. Gardening in California

2.1 Climate in Los Angeles (see appendix VI)

Los Angeles, California, is situated in a Mediterranean, also known as Dry-Summer Subtropical, climate. The characteristics of this environment are a wet winter followed by a dry summer; specifically, Los Angeles averages 329 days of sun per year and most of its cloudy days occur in the winter. While yearly precipitation and temperatures are variable during the months of May through September, the months I will be completing my hands-on project, there are relatively high temperatures, low rainfall, and a high percentage of sunshine.

During May, Los Angeles's temperatures range, on average, from a low of 57.9 degrees Fahrenheit to a high of 74.5 degrees Fahrenheit. The average monthly precipitation is no more than 0.31 inches and usually 66% of the day is full of sunshine. In June temperatures range from 61.5 to 69.5 degrees Fahrenheit, average 0.06 inches of rain, and there are around 66% of sunshine hours during the daily hours of daylight. July and August are warmer months than May and June and they both experience similar

weather patterns. In July and August average temperatures range from 65 degrees to 85 degrees Fahrenheit, the monthly precipitation is 0.01 and 0.13 inches of rainfall respectively, and the percent of sunshine hours is alike, both at 83%. July, with an average of 0.01 inches of precipitation, is the driest month of the year in Los Angeles County. In September, the month I came back to Vermont, Los Angeles average temperatures are between 65 and 83 degrees Fahrenheit; its average precipitation increases to 0.32 inches, and it experiences 79% of sunshine hours a day (NOAA, 2007).

2.2 First inhabitants of Beverly Hills

With such a great growing climate, people have been gardening in the Los Angeles area since before Europeans discovered the area. The first people to garden in this area, and specifically the region of Beverly Hills where the project will take place, were the Tongva Native Americans (Beverly Hills Gov't, 2009). In the Tongva tribal language the word *Tongva* means “people of the earth” and after doing some research on the tribe, I am not surprised they named themselves this as their lives were based around growing food in the region (Barajas, 2009). Specifically the Tongva tribe cultivated wild oats, buckwheat, cress, prickly pears, and white sage, known as Kasili, which was one of the most important plants to the tribe (Incayawar, 2009). The land of Beverly Hills at this time was full of water, fueled by three large canyons, and it is no wonder the Tongva’s named this land the Gathering of the Waters (Beverly Hills Gov't, 2009).

2.3 Landscape and Gardening Styles in Los Angeles

After understanding the wonderful climate in which Beverly Hills and Los Angeles is located, we can begin to understand why certain trends in landscaping in this region exist. This teaches us the current frame of mind that encompasses much of Los

Angeles' garden designs (LDA, 2009). According to Landscape Design Advisor, a company that focuses on Luxury Landscape Designs, Los Angeles landscaping design trends are much different from the rest of the United States as they often reflect a larger-than-life state of mind. Due to the amazing climate that Los Angeles has there are many different types of gardens one may experience; from native gardens to tropical gardens and rock gardens to rose gardens, almost any garden design can be employed in Los Angeles, including newer trends such as ornamental grass gardens and grow-it-yourself vegetable gardens (Daily News, 2002; Colling, 2009).

With such diversity Los Angeles is not restricted to just ornamental landscaping and currently the top trend in gardening in Los Angeles, and nation-wide, is grow-it-yourself food gardens, or GIY gardening (Colling, 2009). According to the Garden Media Group, an organization that tracks gardening trends, grow-it-yourself gardens are the new fad for 2009 while having someone do all the work for you is out (McCoy, 2008). One reason for the recent rise in GIY gardens are the tranquil moments people get from gardening that reconnect them with nature. Another reason is that "people want to have more connection to their own world" (MacVean, 2009: p. 2). Gardening has a way of bringing peace and serenity to the gardener, and some believe is a key ingredient to optimal health. While people who practice gardening have seen these effects for centuries, today experts are agreeing and some believe that gardening can lower blood pressure, boost immune function, and reduce stress (WebMD, 2000). Another reason for the rise in GIY gardens may be from the recent popularity of the localvore movement and more conscious consumers wanting to have a smaller and smaller carbon footprint (McCoy, 2008; MacVean, 2009). GIY food gardens allow people to eat their own

produce that is grown locally, often in a backyard, and doing so reduces their carbon footprint by not driving to get groceries as much and not supporting conventional food systems (Flores, 2002; MacVean, 2009).

2.4 Examples of Gardens in Los Angeles

Today food gardening in Los Angeles is very popular. Whether it is due to an economic recession, a desire to be closer to nature, or a desire to have a smaller ecological footprint, it is undoubtedly growing at a very fast rate (McCoy, 2008). All over Los Angeles, people are turning their backyards, front yards, and whatever land they have into vegetable gardens. These Recession Gardens, as they are sometimes called, act in the same manner as Victory Gardens of the past, being the central focus of saving money, eating more nutritious food, and relieving the pressure of food insecurity (Tortorello, 2009; MacVean, 2009). Furthermore, along with many individuals deciding to garden themselves, there are also many businesses springing up in the Los Angeles area that promote organic vegetable gardening. One such business already discussed is Homegrown Los Angeles, a company that installs organic kitchen gardens in people's backyards (Colker, 2008; Teegen, 2009). Another business is Hayground Organic Gardening. Hayground Organic Gardening is a business run off of a small roof garden in Los Angeles that sows and sells organic vegetable and herb seedlings (MacVean, 2009). This business reportedly has quadrupled in sales within the last year. Finally, aside from new businesses and personal backyard gardens, Los Angeles has developed a CSA known as South Central Farmers that grows food in inner city Los Angeles and sells its shares to the poorer communities in Los Angeles (Administrator, 2009). All of these examples not only demonstrate how food is being successfully grown in Los Angeles, but

also how growing food locally saves money and provides some food security for many residents of Los Angeles County.

Not only are people in Los Angeles growing food gardens, but there are also an increasing number of permaculture food projects in the city. There are many examples of urban permaculture in Los Angeles ranging from backyard homesteads to food walls for the homeless (Rutter, 2007; Dimassa, 2008). The Path to Freedom project is a permaculture homestead in Pasadena created by the Dervae family in the 1980's. In 2008 the Dervaes family was able to produce over 6,000 pounds of produce on their 1/10 acre of land. This project has seen much acclaim from the media in recent years and the overlying theme of the project is to educate and demonstrate the potential for urban sustainability. Another permaculture project in Los Angeles has been developed on the walls of the Skid Row district, an area notoriously know for housing thousands of homeless men woman and children, many of them criminals and drug addicts (Chideya, 2004). Here, permaculture designers have built gardens on a 34-foot long vertical wall that stretches down the Skid Row district (Tomason, 2008). These gardens produce strawberries, tomatoes, basil, corn, watermelons, and other herbs and vegetables, demonstrating a permaculture inspired edible wall, which residents of Skid Row can feed on. This project not only provides food for the homeless but also acts as a catalyst bringing these people together (Dimassa, 2008). While these are just some examples of permaculture in Los Angeles, there are many others, such as a permaculture designed Eco-Village in East L.A (Rochas, 2009; Fox, 2002). and rooftop gardens in the downtown district. Understanding the climate of Los Angeles, some of its landscaping principles, and some gardening projects in the area, are important factors to consider

when doing a case study that looks at the costs and benefits of having a food garden in a backyard.



Permaculture Food Wall @ Skid Row

Allen J. Schaben / Los Angeles Times

From, <http://www.latimes.com/news/local/la-me-garden5-pg,0,6566224.photogallery>



Vegetable Garden at a residence in Los Angeles California

From, <http://www.thewovengarden.com/articles/LA-Times-Edible-Garden/LAT-JohnLyons.jpg>



Rock Garden at the Los Angeles County Police Department 28

From, http://farm3.static.flickr.com/2224/2236573893_74975e0ef6.jpg

III. Sustainable Urban Gardening

Gardening today is becoming more and more popular based on a variety of reasons such as a desire to eat healthier organic foods, reduce one's environmental impact, and save money spent on food. Therefore, the techniques in which successful high output gardens are managed must be better understood (Pollen, 2008; Flores, 2005; Veehuizen, 2006). Successful gardening is a product of careful planning, timing, and knowledge (Ball, 1987; Hemenway, 2002). There are many different ways to have a garden and for the urban gardener, who often does not have sufficient time or space to tend to a traditional garden, there are specific methods that can be employed in order to create a high output low input garden.

3.1 Biointensive Gardening

One approach to gardening, a French method popularized by Alan Chadwick and John Jeavons in the mid seventies, focuses on growing high yields on very small plots of land. These biointensive methods of gardening brought to light the idea of mini-homestead farming. It was determined that a garden's productivity was a result of building healthy soils, a process that continues developing year after year. Building healthy soil using both old and new methods, such as composting and double-digging, made it possible to increase yields up to two hundred percent, based on yields in weight, while reducing energy use and water consumption up to ninety percent (Ball, 1987; Cox et al, 1999; Jeavons, 2002).

The Grow Biointensive sustainable mini-farm aims for sustainable food production and can be broken down into three categories. These gardens are designed

with a healthy diet in mind and therefore aim to produce all the nutrition and calories an urban gardener would need. These categories were not developed by gardeners but are a product of what the U.S. Department of Agriculture states as being a healthy diet, as demonstrated in the Food Pyramid (Cox et al, 1999). The three categories of crop production are: carbon and calorie crops, high-calorie root crops, and vegetables crops representing a 60:30:10 design ratio. Therefore, to produce a sustainable mini-farm, sixty percent of crops produced should be carbon and calorie crops, such as grains that satisfy calorie production (although they take up a large amount of land), thirty percent should represent high-calorie root crops, like potatoes that satisfy maximum amount of calorie intake (and use the least amount of land), and ten percent should be vegetables, that provide essential vitamins and minerals (Jeavons, 2002). While these percentages may vary based on individual diet choices, they demonstrate one way in which it is possible to be completely self-reliant in food-production (Ball, 1987; Jeavons, 2002).

3.1.1 Double digging

One of the most important developments of biointensive gardening is the usefulness of double-digging. Double-digging is a method for deep soil preparation that not only mixes nutrients and compost into the soil but also helps aerate the soil leading to a fluffy raised bed. Double-digging involves digging out two sections of soil, treating it up to two feet deep. This method relies heavily on manual labor, which is often a setback to many, although it pays off with increased yields and an easier overall garden experience (Cox et al, 1999). Another advantage to double digging a bed is that it creates a raised bed without the need to bring in bags and bags of topsoil, thereby saving a lot of money.

Although double-digging has its advantages there are some problems associated with it. Some advocates against double-digging argue that tilling the soil should never be a consideration as it goes against the fundamental ways nature works (Faulkner, 1943; Fukuoka, 1978; Hemenway, 2002). Nature untouched by human interaction, like that of a forest, is very highly productive year after year never having to be tended or tilled. Tilling the soil actually destroys the soil's integral ecosystem and while it initially produces higher yields, in the long run it destroys soil fertility (Hemenway, 2002). These structures take years to create and can be completely destroyed by simply turning the soil. However, this argument is often refuted by arguing that the type of land found in someone's backyard, like a grass lawn that has been trampled on for years, already has a very unhealthy soil structure and only through initial preparations will the soil begin to improve, creating healthy populations of organisms and a healthy structure (Flores, 2002; Jeavons, 2002). Another argument against tilling the soil is that certain plants can be planted that feed nutrients to the soil and help aerate the soil as well (Hemenway, 2002).

3.2 No-Dig Gardening

Unlike conventional gardening and double-digging which tills the soil using heavy machinery or back-breaking work, no-till gardening uses the tilling power of nature to loosen soils, build structure to soils, increase microbial life, and lessen the work of the gardener (Cox et al, 2009; Hemenway, 2002). The concepts behind no-till gardening/farming first made its appearance in literature in 1943 in a book entitled *The Ploughman's Folly*, by Edward Faulkner. Faulkner, being a man ahead of his time, questioned the scientific reasons for plowing to improve crops production. His research showed that tilling the soil resulted in erosion, soil degradation, and yield reduction;

whereas allowing organic matter to degrade on-top of the soil reduced erosion, improved soil nutrient content, and increased overall yields without the use of additional fertilizers. Faulkner is quoted saying “The truth is that nobody has ever exposed a scientific reason to till.” (Faulkner, 1943)

Like Faulkner, another revolutionary farmer/gardener, Masanobu Fukuoka also spoke out against tilling the soil. His book *One-Straw Revolution* was published in the 1970’s and it looked at less scientific and more natural reasons to not tilling the soil. Throughout his experiments with rice growing in the fields of Japan, Fukuoka was able to get more rice on less land than the Government was producing, without the use of any synthetic fertilizers, pesticides, or chemicals of any sort. He did through proper timing of planting, having a constant ground-cover leguminous crop, and putting back rice stalks into the field after the rice was harvested (Fukuoka, 1978; Mollison, 2009). This book sparked revolution as it brought the concepts of organic no-till gardening to the main stream.

Today there are many books written on the subject of no-till gardening. It is one of the core-focus behind the principles of permaculture gardening and is a means of doing less work while reaping equal or better harvests (Hemenway, 2002; Mollison, 2009). One book, entitled *Lasagna Gardening*, by Patricia Lanza focuses on building soils from the ground-up, using newspaper as a bottom layer, than adding different arrangements of organic materials on top, such as manure, straw, and yard trimmings. The principles behind this are the same as in composting, yet here the gardener is composting on-site, meaning that he/she is literally composting over the garden bed that will be planted. This type of no-till gardening, also known as sheet mulching, is becoming very popular

amongst urban gardeners especially those who wish to turn their lawns into vegetable gardens (Florez, 2002; Hemenway, 2002; Lanza, 1998). Many workshops, classes, and books on turning a lawn to a garden tell the reader to do it this way. Another benefit to this type of gardening is the availability of resources. Resources such as yard trimmings, food waste, newspaper, and cardboard are generally free-of-cost. Since these are the materials used in sheet mulching and lasagna gardening it can be determined that these types of gardens are also very inexpensive to create. Furthermore they stress the importance of finding locally resourced materials that can be found in most cities throughout America such as city compost, mulch, and manure programs (Florez, 2002; Lanza, 1998). While no-till gardening is becoming very popular, and techniques such as sheet-mulching or ‘composting in-place’, are becoming more and more known the importance of traditional composting and adding rich, organic, decomposed matter to a garden should not be overlooked (Hemenway, 2002; Mollison, 2009).

3.3 Composting

Another important factor to consider when preparing a garden is compost. While compost can be purchased from garden supply centers, for a sustainable homestead that uses minimal input resources, some form of composting must be practiced on location (Ball, 1987). Composting is the process in which organic waste, such as food scraps and plant material are converted into a dark rich nutritious soil amendment (Ball, 1987; Jeavons, 2002). Composting uses nature’s decomposition process to create the nutrients that feed a garden bed. Composting provides steady long-term nutrients to the soil while improving the soil structure and increasing its ability to hold water and air, creating

healthier soils. There are different methods used for composting, some being more traditional than others (Appelhof, 1997).

A traditional compost pile is comprised of three essential ingredients: dry vegetation, green vegetation, and soil (Ball, 1987). These ingredients need be properly managed in order to create a healthy compost pile. Furthermore air, moisture, location, and temperature are also very important when considering composting. A good compost pile is usually found in a sunny area of the garden in an appropriate location next to the garden beds (Cox et al, 1999). Scraps are collected in the form of food waste, weeds, and through general garden maintenance that are then put on the compost pile, over time turning into nutritious soil amendments (Ball, 1987). The compost pile is turned over every three to six weeks speeding up the rate of decomposition. Usually a good compost pile is ready after three to six months, which can be determined by looking at it and feeling it. In a good compost pile most of the original ingredients will be unrecognizable, it will smell fresh and woodsy like, it will be dark brown or black and be soft and crumbly. While composting is an essential when developing a sustainable mini-farm, traditional composting methods can be problematic for a person with a small urban homestead as compost piles can be large, unsightly, and take up a potential garden location (Appelhof, 1997). One alternative method to traditional composting that caters to urban gardeners is Vermicomposting.

3.3.1 Vermicomposting

Vermicomposting uses red worms to decompose materials. A vermicomposter creates a worm bin in which proper moisture, temperatures, acidity, and ventilation are maintained and food scraps are continually added, creating a rich healthy byproduct for

plants and soil (Applehof, 1997; Flores, 2002). One benefit to vermicomposting over traditional composting is that a worm bin can be placed in a convenient location, like under a sink in the kitchen, where it is not only close to all of the food scraps but it is not taking up any space in the garden. Vermicompost bins can be built in various sizes depending on how much waste a family produces bi-weekly. Therefore vermicomposting is a great alternative for urban gardeners who do not have a lot of land to garden and compost on (Applehof, 1997).

3.4 Permaculture Design Method

Another method of home gardening is developing the permaculture home garden. A permaculture design garden is an ecological garden where the entire area of cultivation and its surrounding elements are treated as a whole ecosystem. The purpose of developing a permaculture garden is to design a system that is self-sustaining, like that of a forest, where each element in the system performs several functions (Hemenway, 2002; Mollison, 2009). In permaculture gardens there is a very high focus on the interconnectedness between all of the parts of the system; the interconnectedness is what “turns a collection of unrelated parts into a functioning system.” (Hemenway, 2002 p. 4)

To develop a permaculture garden first one must make careful observations of all of the elements in the system and subsequently one must develop a detailed plan, which can be up to five years of planning (Flores, 2002; Hemenway, 2002). The final goal of a permaculture garden, which is a product of years of work, is to have developed a mature ecosystem where there are consistently high levels of productivity with little to no external inputs. Although permaculture gardening requires so many different critical factors it provides a multitude of lessons that can be extracted for use in a less developed

intensive garden. Such lessons include: observing the land, visioning the landscape, planning the project, developing a design, and finally implementing the design at a particular area (Hemenway, 2002). Other techniques used in permaculture gardening, such as interplanting and companion planting, can be used in both traditional and biointensive gardens (Jeavons, 2002; Hemenway, 2002).

3.5 Companion Planting

Companion planting is a clever gardening technique that fixes certain plants next to each other, benefiting one or both of the plants (Jeavons, 2002; Riotte, 1998). Companion planting can provide a better growth habitat for plants by repeling certain insects, reducing weeds, supplying nutrients to companion plants, and allowing more plants to be grown in a certain area. Understanding root growth of certain plants, for example, is one-way companion planting allows gardeners to grow two plants next to each other without disturbing one another (Jeavons, 2002). For example, corn can provide the shade that cucumbers enjoy, and onions can repel the detrimental carrot fly, when planted among carrots. Furthermore knowing companion plants teaches gardeners what plants not to plant next to each other. For example, tomatoes should never be planted near plants of the brassicaceae family as the two plants repel each other (Riotte, 1998). There are many companion plants to know about and a knowledgeable gardener can use all of this information to make their gardening duty that much easier. Companion planting partnered with the many other methods discussed is important in helping gardeners create successful sustainable gardens (Jeavons, 2002).

Conclusion

After reviewing some of the different techniques and methods used in creating sustainable gardens, the history and trends of gardening, and the modern state of our society today, we can begin to understand the importance gardening has on our culture and on the vitality of our future world. Furthermore, with so many different methods and approaches to gardening, we can see that these methods must be carefully studied and understood before beginning an actual garden. It is important to understand these methods, create a detailed plan, and design the garden prior to getting into the soil. With the methods discussed, and working closely with mentors like Mark Starrett in the Plant and Soil Science Department and Steve Solomon from SoilandHealth.org, I developed a plan to create a low-input high-output garden in my backyard at home in Los Angeles.

Methodology and Work-Plan

Research Design

The project was created as a low cost garden using the no-dig framework and planted to maximize produce yield. It followed the steps of creating raised bed gardens, as a means of not disturbing the underlying soil, having complete control over the environment, and as a sustainable organic way of turning a plot of grass into a productive garden. For the thesis, I collected all of the receipts for all of the purchases I made toward creating the garden, which included things such as compost, fertilizer, straw, seeds, manure, and mulch. I determined the start-up cost to create the garden and then a cost for ongoing (annual) maintenance. The garden was designed to maximize produce yield by using things like companion planting, crop rotation, and intercropping. Once the garden started showing signs of productivity, and it became time to harvest, I determined the total produce yield and compared the cost with grocery-store purchases. These numbers were used to project annual costs of an urban vegetable garden, the annual yield of an urban vegetable garden, the percent of a family's produce needs accounted for by the urban vegetable garden, and the difference in cost compared to grocery-store shopping for equivalent amounts. This data was used to determine the costs and benefits for a 3-month period as well as estimating annual costs and benefits based on that analysis. In addition, the costs to maintain the grass lawn is included in the cost-benefit analysis for the 'yard costs' to determine the overall economic advantage of an urban vegetable garden over a grass lawn.

Separately from assessing the monetary costs and benefits of having such a garden I kept a written and photo journal noting the daily progress of the garden and other benefits it provided. The photo-journal was used to document the evolution of the garden and was shared with the public in an online blog called Beverly Hills Homestead. Along with the photo-documentation, the written journal was used to assess other social implications of having a backyard food garden that cannot be addressed through a cost-benefit analysis. It noted the general attitudes felt about the garden and my own personal assessment of other values brought on by the garden, which are also shared on the blog. The blog itself was a useful tool in determining what other people think about the garden, as a blog allows visitors to post comments. I used these informal qualitative means of assessing the garden, along with the quantitative ones mentioned earlier, to provide the criteria for success in determining the costs and benefits of having a backyard garden in Los Angeles, California.

Activities and time-line

1. Planed garden design
2. Ordered seeds
3. Started certain seeds indoors 2-4 weeks prior to planting (seeds include squash, zucchini, herbs, flowers, and tomatoes)
4. Purchased all gardening supplies via internet and have them ordered to home in Los Angeles (bags of compost, straw, fertilizer, manure, mulch, etc)
5. Went home for summer ~ May 9th

6. Layed out garden and began planting (transplant seedlings and sow seeds)
(May 9-11)
7. Began Photo document & journal garden on a daily basis (from beginning to end)
8. Updated and worked on blog @ <http://bevelyhillshomestead.blogspot.com/>
9. Created Vermicompost Bin
10. Maintained garden throughout summer
11. Gathered/organizde receipts for everything purchased; as well as determined water usage
12. Began harvesting crops (i.e. herbs, flowers, and fast growing crops)
13. Weighed crops and determine market value of crops if purchased in grocery store.
14. Determined percent of weekly produce needs for family of 5 obtained from garden.
15. Continued steps 7, 8, & 10-13 throughout the summer (continually cataloging this data into an excel spread sheet)
16. Towards end of summer harvest began sowing cool season crops for next season
17. By end of the summer, gathered all information and brought it back to UVM to write results and finish these.

Sampling and Data collection/analysis

Sample and sampling procedure: Not Applicable

Data Producing Instruments: Not Applicable

Data Collection

Data collection includes all expenses incurred with garden set-up, costs incurred in maintenance of garden, costs eliminated for current yard maintenance; costs of equivalent produce purchased in grocery store, and, percent of family food source generated by garden, as well as keeping a journal and blog to track to social benefits provided by the garden. Garden set-up expenses, as well as all other expenses involved in developing the garden, were tracked through purchase receipts. A cost in maintenance was estimated on an annual basis determined from the seed costs in initial start-up and number of plantings needed for year-round yield. Savings in gardening were estimated from current expenditures on maintaining the grass yard minus the amount of money spent on maintaining the garden. Food production was determined over a 3-month period and an annual estimate generated from that time period. The family (of size 5) food needs were estimated based on the family's eating habits over the 3 month summer period and estimated for an annual need. The cost for the equivalent amount of food was determined by tracking local grocery store prices.

Data Analysis

Data analysis includes a comparison of costs in garden development and maintenance to provide the percentage of the case study's family food needs with the equivalent cost for purchase in a grocery store. The 3-month cost-benefit analysis was used to estimate an annual economic savings for the difference of backyard vegetable gardens to grass yard. It also included an informal assessment of the social implications brought by the garden that were determined through documenting the process and keeping an online blog. These two methods of data analysis were used to determine the

overall costs and benefits of developing a backyard vegetable garden in Los Angeles, California.

Resources, Facilities, equipment, transportation

For this project I made use of the necessary resources involved in creating and maintaining a vegetable garden in our family's grass covered backyard. These resources included but were not limited to: a car or pickup truck, basic gardening tools, seeds, bags of compost, fertilizer, and soil, straw, mulch, terra-cotta containers, and trellises for the vegetables. Most of these resources I either owned or purchased with my funds.

The types of gardening tools used for this project included a watering wand, a gardening cart or wheelbarrow, pruning shears, a level-head rake, and a trowel. These tools were used to help create the raised bed, plant seeds, transplant seedlings, water the bed, maintain the garden, and finally to harvest the produce from the garden. Also I used a pickup truck, which my family owns, to transport these tools and resources to and from gardening centers. Specifically this was useful for transporting the heavier resources and ones that take up a lot of space, such as the wheelbarrow, bags of soil, straw bedding, and the trellises. Most of the resources I ordered online so that they were delivered directly to my home, but I also accessed local nurseries and gardening centers when needed. Lastly, the most important resources needed in producing a garden are the seeds, which were purchased from many different online heirloom seed catalogs, such as Seeds of Change and Seed Savers Exchange.

Another very important thing to note within this section is that I attempted to create this project with minimal use of money and outside resources. Therefore I tried, whenever possible, to use recycled materials and get resources for free, as means of

reducing the money spent on the project. The purpose for this was to minimize my expenses in order to maximize the net revenue created by the garden. Lastly it was important to understand that a garden is ever evolving, and while I ended up spending more money than I would have liked on creating the garden, it is important to note that these expenses slowly decrease over the years and eventually, the economic benefit of the food-source garden will increase over time.

Budget

Seeds: Heirlooms cost between around \$2.00-\$4.00 for a packet of ~30 - 50 seeds (investment for future garden)

Tomatoes: 2 Varieties ~ \$5.00

Peppers: 2 Varieties ~ \$5.00

Carrots: 1 Variety purchased (1 Variety Donated) ~\$3.00

Onions: 1 Variety ~ \$4.00

Pole Beans: \$4.00

Peas: \$4.00

Salad Mix: \$4.00

Zucchini: \$4.00

Squash: \$4.00

Kale: \$4.00

Broccoli: \$4.00

Strawberries: \$4.00

Herbs: Many different herbs ~\$10.00-\$15.00

Flowers (Marigolds, Nasturtium, Morning Glory) ~\$10.00-\$15.00

Tools:

Watering Wand: Free Already Own

Garden Kart/Wheelbarrow: I might own/ \$120.00

Pruning Sheers: Free Already Own

Level Head Rake: \$15.00-\$20.00

Trowel: \$5.00

Trellis: Nearly Invisible Netting for Beans/Peas - \$15.00-\$20.00

Tomato Cages: ~8-10 Cages @ \$14.95 = \$120.00-150.00

Terra-Cotta Strawberry Pots: ~2 @ \$20.00 = ~\$40.00

Supplies

Soil Testing: \$15.00

Truck: Free Already Own

Compost: Free/Donated / 280 Cubic Feet @ \$22.00/60 Cubic Feet = \$110.00

Fertilizer: 1 40 lb Bag of Cockadoodle Doo Fertilizer = \$ 25.00

Straw: Free / Donated / No Estimate To Date
Mulch: Free Organic Mulch from City of Los Angeles found at
(<http://www.diglounge.net/city-beat/free-organic-mulch/>)
Newspaper/cardboard: Free Already Own
Set-up for Compost System: ~ Free/\$100.00 (Depending on how/if I do it)
Set-up for Vermicompost System: Free/ Donated by City of Santa Monica

Total Estimated Cost For Project: Low = ~ \$500.00 High: ~\$700.00

Risk Management and Ethical Issues

For a gardening project thesis the risk management and ethical issues are low, although there are a few. One issue is soil contamination. The land on which I created the garden was first be tested at UVM's soil testing facility for soil contaminants, such as heavy metals and lead, to ensure there was no threat in contamination of the produce. Other risk management issues dealt with the risk of injury when doing the physical labor of gardening. These issues were addressed by thorough preventative care, such as not using dangerous machinery and being extra careful and conscious when installing and maintaining the garden so as not to injure myself.

Limitations

There are some limitations in this study that are mainly a result of location. Because it is a place-based case study, the results are not generalized to other homes, yards, and gardens in other places of the country. Also, differences in climates, soils, costs of gardening supplies in a region, and costs of organic produce for area may vary

dependent on the region. Therefore, one limitation that exists is in the project portion of the study in which it was only relevant to an area like Los Angeles.

Contingencies and alternatives

In developing a garden for a project based thesis there were a few contingencies that I had to anticipate in order to avoid any problematic situations. These contingencies included not being around for part of the summer due to a family vacation, destruction of the garden due to pests and diseases, and destruction of the project due to certain natural disasters that may occur. These contingencies were discussed prior to engaging in the project as to limit the problems that may have arose.

One issue involved a family vacation from July 30th through August 9th. This created an issue of tending to the garden and harvesting crops. In order to cope with this, I worked with one of my gardeners (Uriel Rojas) and ask him to help maintain the garden in my absence. Furthermore I placed a scale with a pen a paper right in the kitchen, next to the garden, to make it very simple for anyone to pick produce and quickly weigh it, which helped prevent inaccurate yield calculations. Therefore, through proper planning these contingencies were avoided.

Another issue involved the threat of pests and diseases in my garden. As this is the first time I have planted a garden in this location I did not know exactly the pests and diseases I would face; although, through reading literature, talking to local gardeners, and smart planning I attempted to avoid most of these pests and diseases so they did not hinder the performance of the garden.

Finally the third contingency for any land-based project, such as this garden, is the threat of natural disasters. In Southern California the highest threat of unpreventable natural disasters is in the form of earthquakes and fires. While earthquakes are something that cannot be avoided or planned for other natural disasters, such as a drought and fire, can be avoided through careful monitoring and planning. Disasters such as a draught, which are so common in Los Angeles' summer, were avoided through monitoring, mulching, and watering. Furthermore, being in Beverly Hills, I was lucky enough not to be affected by any summer fires. Therefore while there were many contingencies I anticipated while developing the garden, all of them were avoided through smart planning and maintenance.

Results and Outcomes

The results and outcome section can be divided into two parts. The first part is the quantitative assessment of the project. The quantitative assessment is the cost/benefit analysis of the project; these results are numerical and data driven and represent the investment costs of the project and the return on investment from the produce grown. The second section of results is done through a more qualitative assessment of the project. Since this was a creative project-based thesis and since the value of gardening goes far beyond simply numerical data, a separate qualitative assessment of the project was conducted. This was done through careful daily observations of the project and documenting them through a public online blog as well as a more intensive personal journal. While the quantitative results are the easiest to be extracted and added to current gardening literature, the qualitative portion of the project is what I believe to be the strength of the overall thesis, as it provides an in-depth look at the process of creating a backyard garden, using no-till agriculture, in Beverly Hills California, during the summer of 2009. (Weather Report Summer 2009; See Appendix)

Quantitative assessment of cost/benefit

The quantitative assessment of the costs and benefits of having a backyard vegetable garden in Beverly Hills, California are represented by two main data sheets. The first data is seen here in Table 1 where the costs of setting up this garden project are displayed in detail. Each cost is specified based on individual expenses of the project as well as the total sum of all the costs. The overall cost as seen in Table 1 is somewhat larger than the anticipated cost of the project (500-700\$, see Methods section).

(Table 1 - COSTS OF GARDEN)

<u>COSTS</u>	<u>Ammt. #</u>	<u>Price / unit</u>	<u>Total costs (\$)</u>
Garden Set Up			
Bedding	1	34.99	34.99
Bedding	6	1.99	11.34
Soil and Border	Help + Supp.	442.97	442.97
Tomatoe Cage	5	1.49	7.45
Trellis	1	34.99	34.99
Soil	3	7.94	23.97
TOTAL			555.71
Plants			
Vegetables	2	1.19	2.38
Tomato	2	2.99	4.98
Vegetable	1	1.19	1.19
Rosemary	2	5.99	11.98
Plants	Annonymouse	65.45	65.45
Plants	Annonymouse	209.87	209.87
Total			295.85
Seeds			
Jalapenio	1	1.75	1.75
Peppers	1	1.75	1.75
Tomatoes	2	2	4
Alyssum	1	3.69	3.69
Amarynth	1	3.29	3.29
Mint	1	3.29	3.29
Arugula	1	3.29	3.29
Total			21.06
Total Costs of Garden Setup			872.62

It is somewhat higher due to obstacles I ran into when actually creating the garden versus the research based estimates. The challenges leading to cost discrepancies between estimated and actual expenses are summarized further in the qualitative section. The

cost/benefit analysis is based on the actual costs presented in Figure 1 and the subsequent gain in savings from having vegetables produced in a backyard garden.

As shown in Table 1, the majority of the money that went toward setting up this garden falls under the Garden Set-up section. Specifically, most of the money, just over half of the total costs, was spent in the soil and border section. While this will be discussed in more detail in the qualitative report, the main reason for this expensive price was that all of the soil had to be purchased in individual bags from the gardening center. The total number of bags purchased was around thirty; a number needed to make the garden beds high enough in which to grow vegetables. While I had initially planned on using free compost and mulch provided by the city of Los Angeles, I found that the product was not suitable for a healthy organic vegetable garden; the stories and reasons will be discussed in the next section. Therefore, the actual costs of establishing the garden were somewhat higher than my initial estimates, based on web research of Los Angeles sources when at school in Vermont.

Another large cost that was seemingly unforeseen is the \$295.85 spent on purchasing small plants from the garden center. While my initial plan was to purchase seeds for these plants and start them on my balcony during UVM's spring break, I discovered by May that this was not feasible as I was not home to take care of them and no one in my family works (or had worked) with plants or seedlings; most of the seedlings we attempted to grow failed as a consequence. Therefore, when I returned in early May to begin my project and found few of my seedlings to be viable, I decided the best plan of action would be to purchase small organic plants from the gardening center. This would not only allow me to get started with gardening and reaping a harvest sooner,

but it would also create a longer harvest period for data collection, being that I had just four months in which to establish, grow, and harvest vegetables.

When comparing the actual total cost of garden set-up to my estimated costs of set-up, between \$500 - \$700, we can see that the main difference lies in the amount of money it took to get the proper soil and compost to make the garden beds. Initially I had planned on getting free compost and mulch from the City of Los Angeles. After searching the internet and speaking with Los Angeles city officials (in Vermont during spring, 2009) I had learned of the numerous compost and mulch programs throughout Los Angeles. These programs were the basis for my proposed thesis as they were the means of keeping a very low initial cost. Throughout all of the literature on low-cost permaculture-inspired gardening the central theme was to use locally resourced products. Furthermore we are supposed to find these products locally from free sources and or get them donated. So while I was in Vermont I found as many sources as possible to complete the project using low-cost (or free) locally resourced ingredients. To my dismay when I returned to Los Angeles I rented a U-Haul and drove to a Free Compost center in Griffith Park (See Appendix II). On arrival the compost smelt of pure manure; it was a steaming pile and I was told that it was the 'compost' generated from the Los Angeles Zoo waste. The compost smelt like pure manure and I was told it was full of high levels of nitrogen and was not very broken down. I took some back with me to use and after speaking with landscapers from Los Angeles, I found that this compost was entirely unsuitable to use as a soil for vegetable gardening. Furthermore I found that the other sites claiming free mulch/ compost had material that was full of plastic, rubber,

bottle caps, and a lot of broken glass. I could tell this was not the compost I was used to in Vermont and therefore I had to make adjustments in my supply source.

Next I found a company that delivered whole sale compost/organic soil by the truckload. This seemed like the answer after the week of scavenging Los Angeles for free materials suitable for organic vegetable gardening. I had finally found a place that would deliver the amount I needed for just around \$200.00. However, another hurdle was right around the corner, as the City of Beverly Hills does not allow trucks (like this one) to deliver unless a permit is granted. Furthermore, a permit is nearly impossible to get in a timely manner in Beverly Hills and it also costs around \$200.00 to get. Now I was back to square one with time slipping by and I needed soil to start gardening! On my third and final decision, I decided to go to the gardening center and purchase individual bags of organic soil. It was the only way to get this done and I did not have time to waste. Although I had extensively planned out my project in Vermont, I discovered that I needed to adjust my ways in order to complete this project in Beverly Hills, California. If it weren't for this obstacle, the total project cost would have likely fallen under my estimation.

The second data sheet is the Vegetable Garden Report (Table 2). This set of data was collected on a regular basis during each harvest. The produce was weighed and written up on an excel spreadsheet. During this time I gathered receipts and prices from the local Whole Foods Market and typed them into the excel spreadsheet. These were the values I used to compare the savings for a family by growing their own vegetables and the cost of growing a garden to produce the vegetables.

Table 2 – Harvest & Money Saved

Herb/Veg.	Weight (g)	Date	Use	price per g	Total Money
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						Saved (\$)
Basil (reg)	89	18-Jun	Made Pesto	28g=\$1.00		3.178
Thai basi	28	18-Jun-09		28g=\$1.00		1
Arugula	190	22-Jun-09	salad	35g=\$1.00		5.428
Arugula	207	27-Jun-09				5.914
Thai basil	6	27-Jun-09				0.214
Arugula	212	28-Jun-09	Salad			6.057
Basil	17	28-Jun-09	Pasta sauce			0.607
Swiss Chard	61	29-Jun-09	Tofu Scram	1 bunch \$1.99		1.517
Swiss chard	265	30-Jun-09	Sautee			6.59
Basil (reg)	550	30-Jun-09	Pesto and Polenta Pesto Dish			19.642
Arugula	946	4-Jul-09	Salad			27.085
Zucchini	397	10-Jul-09		1.99 per pound, 16 ounces or 26gx16		1.899
Arugula	28	12-Jul-09	Salad			0.8
Basil (reg)	41	12-Jul-09				1.464
Arugula	70	12-Jul-09				2
Cilantro	25	13-Jul-09	Tofu Scramble/Juiced	18.899 g for 1.99		2.63
1 Giant Anehome Pepper	1 pepper	14-Jul-09				
Basil (reg)	29	16-Jul-09				1.035
Swiss Chard	40	16-Jul-09				0.995
Swiss Chard	29	19-Jul-09				0.721
Cilantro	41	19-Jul-09		2/3 ounce for 1.99		4.317
Peach	182	20-Jul-09	eat whole			
1 Tomato: Black Krim	148	22-Jul-09	Salad	2/3 ounce for 1.99		2
6 Nasturcium Flowers	6 flowers	22-Jul-09	Salad			
Arugula	36	22-Jul-09	Salad			1.028
Sage: Bundle 1: Fresh	34	7/22/09	Dried For Bundles	1 bundle = \$6.99		10
Sage: Bundle 2: Fresh	30	7/22/09	Dried For Bundles			
Sage: Bundle 3: Fresh	32	7/22/09	Dried For Bundles			
Sage: Bundle 4: Fresh	28	7/22/09	Dried For Bundles			
1 Tomato: Black	183	7/22/09				2

Krim					
Dill 4 stems	41	7/22/09	Flowers as decorative		
Basil (regular)	318	7/22/09			11.357
Thai basi	159	7/22/09	Flowers as Decorative		5.642
Cinnamin basil	63	7/22/09			2.25
Chives	56	7/22/09		2/3 ounce for 1.99	5.896
1 Tomato: Black Krim	188	7/24/09			2
8 Nastursium Flowers	8 flowers	7/24/09			
1 Heirloom	277	7/29/09			2
Tomato: Oregon Spring					
1 Heirloom	74	7/29/09			1
Tomato: Momotoro					
Purple & reg Basil	38 OUNCES	8/11/09			38.474
1 green tomato	141 g	8/11/09			1
1 Zucchini	366	8/11/09			1.751
1 Zucchini	455	8/11/09			2.176
Tomato dark red	2 1/2 ounces	8/6/09			1
" dark red	4 ounces	8/6/09			1
" dark red	5 ounces	8/6/09			2
" dark red	5 ounces	8/6/09			2
" dark red	5 1/2 ounces	8/6/09			2
" dark red	5 3/4 ounces	8/6/09			2
" dark red	5 7/8 ounces	8/6/09			2
3 Tomatoes, Center plant	207g total	8/17/09			3
1 Tomato	240	8/20/09			2
1 tomato	182	8/20/09			2
1 tomato	87	8/20/09			1
t tomato	78	8/20/09			1
1 tomato	226	8/20/09			2
1 tomato	207	8/20/09			2
1 Sweet Bell Pepper	117	8/23/09			
1 Black Krim	377	8/23/09			3
1 Momotoro	187	8/23/09			2
1 tomato	128	8/23/09			1
1 Tomato	48	8/23/09			1
2 tomato	157 total	8/25/09			2
1 Tomato: Black Krim	79	8/26/09			1

Tomatos
vary in price
with average
\$1. To \$2.00
depending
on size and

**TOTAL
SAVINGS**

type

216.67

As shown in Table 2, there was a comparable savings of \$216.67. This figure represents the harvests from June 18th till August 26th, a three month period in total. The first month there was no harvesting because that was the period of time needed for plants to grow sufficiently large to yield enough to begin harvesting.

Table 2 lets us see that the majority of the money saved came through the immense amounts of basil grown. The total money saved from basil was \$84.83. Though we grew a lot more basil than we could consume, we used the excess basil as decorative throughout vases in the house. The purples, reds, greens, and different flower colors, as well as the strong scent, made decorative basil a favorite among my family for the summer. The savings was based on the cost of basil as an edible food and not decorative. If we were to adjust the savings for that purpose as well, it would exceed the \$216.00 total costs (decorative floral arrangements are generally most costly than basil used as a food). Therefore, the \$216.00 is a very conservative estimate of the cost savings.

Using the data collected in Table 1 and Table 2 we can estimate an annual cost/benefit analysis for developing a vegetable garden, using no-till methods, in Beverly Hills. The initial garden set up was approximately \$870.00. The average yield in a three-month period is around 220.00. Assuming on-going maintenance cost are minimal and decline over time, as reflected in the literature of permaculture gardens, the total annual money saved through harvest would be approximately \$900.00/yr ($220 * 4$). This first year savings already exceeds the initial costs of establishing the garden. Furthermore, as I

noted above, the use of many plants for decorative purposes was not included in the cost savings as ‘bouquets’ are less easy to price. In this study, the cost savings estimated for the first year exceeded the overall cost of establishing the garden.

Qualitative Results

The qualitative results of the costs and benefits of having a backyard, no-dig, vegetable garden in Beverly Hills, California, are divided into two main sections. The first portion of these results represents the challenges faced when attempting to design and build a garden. In contrast, the second portion of my results reflects the rewards gained, both at a community level and for me personally. All of the data collected for the qualitative section are represented by a daily journal, a public online blog (<http://beverlyhillshomestead.blogspot.com>), and photo-documentation.

Challenges

During the four-month period, from May through August, I faced many challenges. As described on the blog and journal entries, the challenges, while funny, were very frustrating at the time. Most of these challenges took place during the initial instillation of the garden though there were some, such as plant disease, that kept up throughout the summer. The most important finding I learned from the challenges as a whole and one of the most important results in the thesis, that is, the difference between a real life testament to the experience of building a garden (and perhaps conducting research in general) versus the anticipated experience based on the literature on the subject.

Specific examples of the difference between anticipated and actual experiences are illustrated by my challenges to obtain ‘mulch and compost’ initially in establishing

the garden. I found that free city mulch and compost throughout Los Angeles, California, that is said to be “organic” (since they do all of the composting without adding any chemicals) is entirely unsuitable for backyard vegetable gardening. As mentioned earlier, some of the locations I visited had compost that smelt of partially decomposed manure, much too strong for vegetable gardening, while others had “organic” mulch full of glass, plastic wrappers, rubber, and other garbage that is not meant for healthy soil life and therefore a healthy garden. This dilemma is not mentioned in the literature as most of what is written suggests that when we identify free garden resources, the material (mulch/compost) will be ideal (or at least adequate) for their purpose. Furthermore it is congratulated when these appropriate places exist and are utilized.

Another example of a challenge faced was using newspapers to cover the grass prior to making the raised beds. Newspapers and cardboard are recommended in the literature for creating a no-dig garden. Before I could commit to using the piles of newspaper my family had saved for me throughout the year, I wanted to make sure the ink on them was not derived from synthetic chemicals so I did not contaminate my project. To answer this question I called the *Los Angeles Times* office. As written in my blog I had a funny experience with the efforts. The first person I spoke to did not know the answer and so he transferred me to his supervisor. When I asked his supervisor if the ink used on the *Los Angeles Times* was derived from synthetic chemicals he began accusing me of being part of some larger environmental organization. From the tone of his voice I could tell he thought I was a reporter, involved with the EPA or some similar organization, and perhaps that I was attempting to uncover and bring down the *Los Angeles Times* in some sort of environmental scandal. I could tell this man was very

paranoid and I explained to him that I was a student doing a gardening project and needed the information for that and nothing more. To say the least, I do not believe he even knew the answer as he quickly transferred me to his supervisor. I now found myself talking to the supervisor's supervisor of the *Los Angeles Times*, this man had a strong yet calm tone in his voice, he spoke slowly and clearly; I could tell he was not as paranoid as his subsidiary. When I told him my dilemma, he responded that all of the ink used on the *Los Angeles Times*' paper is made from soybean-based inks. My call was answered, and I proceeded to use the newspaper as the base of my garden project. Nothing, no books and no literature could have prepared me for that!

While I could find information in books and online saying that most newspaper ink today is soybean based, it was a huge stretch and nearly impossible to find if my local paper fell into the same category. When creating a vegetable garden in this manner questions such as this come up which need a clearly defined answer (as this was a fundamental theme supporting the health of my garden). While I overcame this challenge, it should be noted that no literature comments on these challenges, such as the dirty compost and mulch or hard to find information, and these challenges comprise a crucial component to executing any urban no-dig garden project. Furthermore, Los Angeles California, as one of the largest cities in the United States with huge urban sprawl and millions of people, should act as a testament to other cities throughout the world. If it is difficult here, it is likely quite difficult in other communities of comparable size.

Another challenge I faced had to do with the spacing of two zucchini plants. Based on my original design I had planned to put two zucchini plants in my garden in a

space that was about 4 ft by 4 ft. With the help of books and peers the consensus back in Vermont was that the spacing of the zucchini plants would be sufficient. I emailed my garden plans to a professional in the field, Steve Solomon, and in his response he said that the zucchinis would not work, as they need a much larger space for growing. Furthermore he said if they do ‘appear’ to be growing they will not grow or fruit well as there is not enough space to make them large healthy plants. I decided to follow the general book consensus and once I put the plants in the ground I too realized they were going to get much too large for the pre-planned garden design. To cope with this my friend Uriel, the gardener at our home in Beverly Hills, suggested that I put small tomato cages around the zucchinis to prevent them from spreading out in an attempt to grow them in a more vertical fashion. I went with this advice and to my dismay the zucchinis ended up being the least healthy plants in the garden, not to mention they only fruited a handful of times. Furthermore due to the large foliage of the plants and the controlled habit to have them grown in a tomato cage, the plants got minimal air flow and became susceptible to a terrible case of powdery mildew, prevention of which became my main task for the upcoming summer months. The challenge that arose was one of trial and error, though in hindsight, red flags were raised. Now I know, and everyone else can know, not to try and grow zucchinis in tomato cages.

Rewards gained

The next section of qualitative results describes the rewards gained though this project. While addressing in length the challenges met, the rewards gained greatly exceed any of the problems encountered. The rewards gained through the creation of a no-till vegetable garden in Beverly Hills, California, can be broken down into three

sections. First is the positive impact the garden had on my immediate family and close friends, second is the impact it had on the community at large, and third is the personal impact it had on me.

Creating the backyard garden had a tremendous impact on my immediate family members as well as my close friends. First, I believe it brought my family closer together. I should mention that no one in my family had any experience with gardening, aside from my father who grew up on a farm in Fort Wayne, Indiana, which he has moved as far away from as possible both physically and mentally. Throughout the summer months, my family and I would harvest vegetables and greens; a favorite being the heirloom tomatoes and arugula, which we would then prepare into a salad and eat together as a family. I found my sister, brother, mother, father, girlfriends, and boyfriends independently walking through the garden nibbling on edibles the whole summer. This was a big change for my family as none of them has been involved in a garden before. I had friends helping me plant, lay-out, and harvest the garden. Everyone loved it and shared stories about it with their friends and family.

One evening, when my dad was having his annual business Christmas party at our house, I noticed the garden take on a new character. Some of my father's friends brought their little children to the event. As everyone knows little kids hate being at adult social events, simply because they are bored. During this night I watched children run through the different pathways of the garden. They would jump between beds, landing and walking only on the designated pathways. They would hide behind large tomato plants, jump out and run around; they had an overall sense of happiness and joy. While my family has no one under the age of 19, it wasn't until this night that I got to see the

influential and positive aspects my garden brought to little children. In a situation made to bore kids, adults drinking, eating, being social and walking around these kids were having an amazing time. One moment I talked to their father, who said it was so great that I had this garden as his kids really enjoyed and needed a place to play. Therefore the garden also acted as a playing area for small children, a reward I would've never seen if it weren't for my fathers Christmas party.

Aside from my close family and friends, the garden impacted the larger Los Angeles community as well as other people throughout the country. Through word of mouth and readers of the blog other people also started gardens in their backyards. Many of my mother's friends, who would visit my garden, now have their own vegetable gardens in place of their lawns, or parts of their lawns. Furthermore, my vegetable garden affected a larger community of people I don't know. My blog gained two followers and many extended family members would ask when I was going to update it next. Also, my mother (Sue Smalley) wrote a blog on the Huffington post about the garden. The article got many responses and people nationwide were able to read it. After its publication there were numerous responses congratulating me on my work. The Huffington post report got more people reading my blog and I even was invited to do be on a children's TV special talking about this type of 'no-dig' gardening. While the TV show never happened, it still made me that much happier as I knew my project was touching other people. (See Appendix IV & V)

Aside from my family, friends, and community, the project helped me gain more respect for gardeners worldwide. It made me feel connected to the millions of people who garden around the world and brought me to a deeper connection with the natural

world. One of the greatest rewards for me was getting to know our family's gardener Uriel. Uriel has been working for my family for years and until this past summer I had never really spoken with him. Over the summer we worked together creating the garden, maintaining it, and solving problems. He shared his life and culture with me as I opened up with him. One day we got lunch at his family's restaurant The Tapla and listened to mariachi music in his truck. Uriel is a Mexican-American from Los Angeles, California; he even went to the same grade school as some of my friends. One of the most interesting things I learned was that his family has a history of charreada, the Mexican Rodeo. He, like his father, is a *charro* (a cowboy by our standards) and he competes in competition riding horses and lassoing bulls. I had never heard of this sport before but have recently learned about how huge it is here in Los Angeles. Meeting and becoming friends with Uriel and his father, learning their culture and ways, was the most gratifying reward this project gave me. The project taught me to have more respect for my hometown of Los Angeles, it allowed me to meet some really great people along the way, and provided me with more practical knowledge on this method of gardening, a knowledge that no books, school, or literature can teach but can only be discovered from personal experience.

Aside from allowing me to respect my hometown and local culture that much more, the project also taught me the difficulties when designing, implementing, and building a garden. No garden can be perfect through merely design but careful observations, understanding the pattern of the land, the living soil, and trial and error all will continue to improve the function of a garden. By the end of the project, I respected

my work that much more, and I gained hope for the future in the field of organic, permaculture, no-dig gardening.

Discussion & Conclusion

In the past four years I have read numerous books on the subject of low-cost, low-maintenance, permaculture inspired gardening, many of which are referred to in my literature review. Throughout all of these books the underlying core theme is to use locally resourced materials that are either donated or gathered for free. During my experience I found this to be not as true or easy as readers are made to believe. One example of this is my story on getting the supplies to create my garden. Once attempting to identify and haul all of the free locally resourced products available (compost & mulch); after having my fathers '52 Ford break down on me while driving to the compost center, and after renting an oversized U-Haul to pick up "free organic city compost," I learned that what I was told to do throughout all of my studying of the literature does not work. There are always bumps in the road, and for me the bumps were so large they literally flipped my proposed project on my head. In no books or literature that I read do they address these issues. Yes, I found locally resourced free city compost, mulch, manure, and other soil amendments. While it took weeks of researching, plugging in calculations, design, and many phone calls, I had developed a perfect plan on what I was to do when I arrived home in early May, 2009. I had a clear estimate of my projects cost being on the low end of \$500.00 to a high of \$700.00, only to come home and realize that this was not possible. The lack of overall generalizability of the literature to actual experiences specific to cities or sites is something that creates large unforeseen problems with which an urban backyard gardener must cope. The literature needs to be updated for our cities and based on place but perhaps most importantly, there needs to be more

written on the types of challenges that arise when attempting these projects. The idealistic ways of doing things must be modified to include the range of unforeseen challenges faced so that the true costs and benefits can be addressed in a more realistic setting. Literature on this type of gardening must not be painted with a golden brush, but additional research and real-life examples are needed to elucidate the pros and cons of such a project.

In my proposal, I outlined several contingencies that may have hindered the project. The first contingency was if a natural disaster were to occur, the garden would be destroyed. Luckily, no natural disasters occurred except for one earthquake over the summer, which had no effect on the garden. Another contingency was that my family's summer vacation might impede on my ability to maintain, harvest, and weigh the summer's produce. This was addressed through the help of our family gardener Uriel who maintained the garden while I was away and our housekeeper Anna who continued to weigh and keep track of the produce harvested for the week that I was gone. The final contingency was that pests and disease could kill the entire project. This was not the case due to careful design and observation. Through using companion planting, introducing ladybugs, and self-maintenance, all pest and disease problems, except for the zucchini plants – which eventually came back to health- stayed in check. Since the contingencies did not affect my overall project, I was successful in completing the cost/benefit analysis and qualitative assessment of the garden.

The quantitative results of this project show us that in Beverly Hills, California, a city driven by money, it is nearly impossible to develop a no-dig permaculture vegetable garden using the current guidelines addressed in the literature. Whether it is due to

unsuitable waste recycling programs, limited access to permits, or the general sense of lack of knowledge, creating a low-cost no-dig vegetable garden is not feasible. While the ideal cannot be created in Beverly Hills, we still are able to generate enough produce in a garden like this to gain a full return on our investment after one full year. The results show that creating a no-dig organic vegetable garden does work but it is not an easy walk in the park and it does cost some serious start-up money. Within one year, however, the savings from vegetable growth outweigh the initial start-up costs.

While the quantitative results allow us to see the monetary success of the project, the qualitative results provide much more as they help identify some of the practical issues anyone faces when attempting to establish a no-till garden. They illustrate the range of challenges faced (and not suggested by the literature) while also illustrating the range of benefits a garden may have well beyond its function (i.e. food production). As illustrated in the results section, the garden had a positive impact on my own sense of self-worth, my view of gardening in general, and a means of creating positive experiences with my family and the community at large.

Recommendations

This thesis helped me identify several topics that could help the field. First, I think we need more qualitative descriptions of ‘real-life’ experiences met by gardeners attempting to ‘follow the book’ and build no-till gardens. While I ran into several challenges, I would guess that others have experienced these or different challenges – all would be beneficial for the student about to begin to build his or her own garden. Books need to elaborate in greater detail some of the real-world practical problems when building a garden. Only through the actual experience of building the garden did I learn that what I had read in books was not actually what I would experience. The fact that I attempted to do what all the books say (and say is so easy) is the only way that I learned how challenging it can be, and from that I can learn and teach others that it is not necessarily true what you read about the simplicity of no-till gardening. Second, I learned that building a no-till garden is cost effective and I would recommend it to others interested in having home grown vegetables as a means to potentially save money (after the first year, presumably). However, more importantly than the cost/benefit in terms of finances, I recommend a no-till home garden for reasons that go way beyond money. They involved having a positive sense of oneself and connecting to others such as family, friends, and community.

Final Thoughts

This thesis allowed me to show that it is cost effective to establish a no-till garden in the backyard (at least in Beverly Hills, California). The study demonstrates that although the initial investment is high, by the end of one year of produce generation, the garden will have paid for itself. Since organic produce is very expensive in conventional supermarkets, based on the current study, it is likely that by the second year, the no-till vegetable garden will be saving a family significant funds toward home produce. However, the back-yard garden did much more than yield food. It was a source of positive benefit to myself, my family, and the community at large. Sharing food grown from one's own yard is a powerful means of connecting oneself to what we eat and one another; the social benefits may far outweigh the cost benefits.

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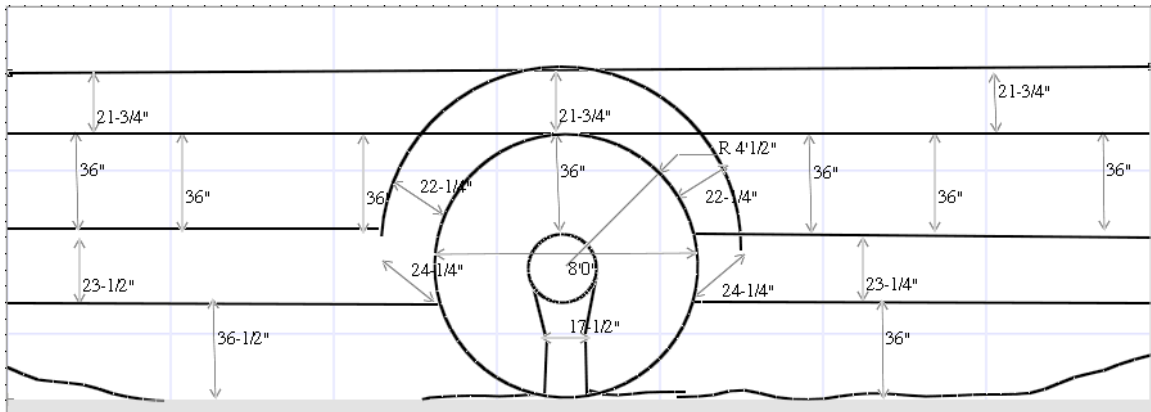
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Cover Photo

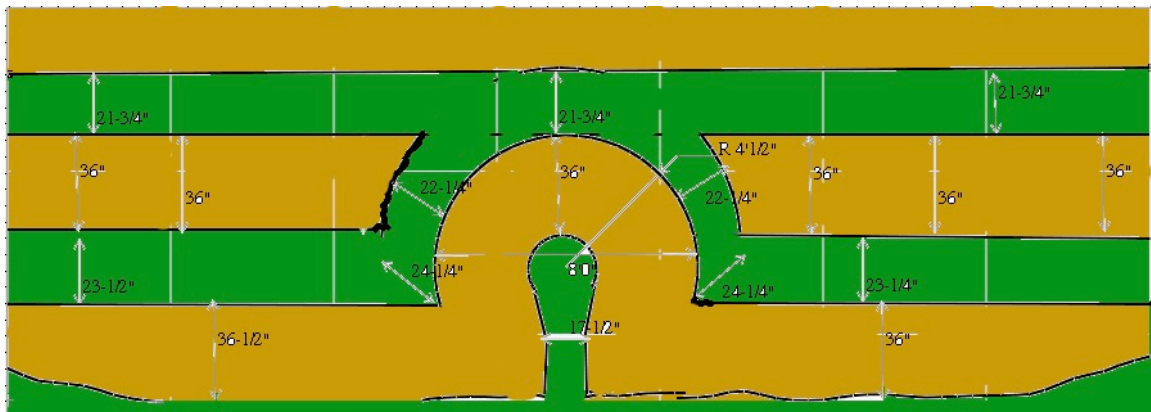
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Appendix

I. Original Sketches of Garden



I.I Color – Footpath's in Green; Garden beds brown



II. Free Mulch Flyer



NEED MULCH?

IT'S FREE

IT'S MADE FROM YARD TRIMMINGS

Bring your own shovel, bag or pick-up
Load up your own containers and take as much as you need

Available at 8 Locations

(Map on other side)



Lake View Terrace 11950 Lopez Canyon Rd., At Paxton St. Sylmar, CA 91342

Time of operation : 7:00 a.m. - 5:00 p.m., Seven days a week.

Sheldon- Arleta 12455 Wicks St., Sun Valley, Los Angeles, CA 91352

Time of Operation: 7:00 a.m. - 5:00 p.m Seven days a week.

West Valley 16600 Roscoe Pl. North Hills, CA 91343

Time of operation : 7:00 a.m. - 6:00 p.m., Seven days a week.

Donald C Tillman 15800 Victory Blvd., Van Nuys, CA 91406

(Entrance South of Densmore Ave. Intersection)

Time of Operation: 7:00 a.m. - 4:30 p.m. Mon-Fri, Sat 8:00a.m. - 12:00 p.m.



West LA 6000 W. Jefferson Blvd., Los Angeles, CA 90016

Time of Operation: 7:00 a.m. - 5:00 p.m Seven days a week.

East LA 2649 E. Washington Blvd. Los Angeles, CA 90023

Time of operation : 9:00 a.m. - 3:00 p.m., Friday, Saturday, & Sunday.

Elysian Valley 3000 Gilroy St., Los Angeles, CA 90039

Time of Operation: 7:00 a.m. - 5:00 p.m Seven days a week.



San Pedro 1400 N. Gaffey St. San Pedro, CA 90731

Time of operation : 7:00 a.m. - 5:00 p.m., Seven days a week.

For more information call James Kurz: (818) 834-5128

City of Los Angeles. Bureau of Sanitation



As a covered entity under Title II of the Americans with Disabilities Act, the City of LA does not discriminate on the basis of disability and upon request will provide reasonable accommodations to ensure equal access to its programs, services and activities.

II.I Free “Organic” Mulch – Dig Lounge

<http://www.diglounge.net/city-beat/free-organic-mulch/>

same locations as on flyer

Free Organic Mulch

Thu, Jan 17, 2008 City Beat

I've bought countless bags of organic mulch from Anawalt over the years. But did you know the city provides you with free organic mulch? Just bring your own shovel, bags, containers, or pick-up truck and load it up! Take as much as you need. Locations after the jump.

0 tweets [tweet](#)


Lake View Terrace
11950 Lopez Canyon Road at Paxton St
7 days a week
7 am – 5 pm

East Los Angeles
2649 E. Washington Blvd
Fri, Sat, Sun
9 am – 3 pm

San Pedro
1400 N Gaffey St
7 days a week
7 am – 5 pm

West Valley
16600 W Roscoe Blvd
7 days a week
7 am – 6 pm

West Los Angeles
6000 W Jefferson Blvd
7 days a week
7 am – 5 pm



III. Griffith Park – Free Compost Center

http://www.ci.la.ca.us/san/solid_resources/recycling/composting/griffith_park_facility.htm

SOLID RESOURCES

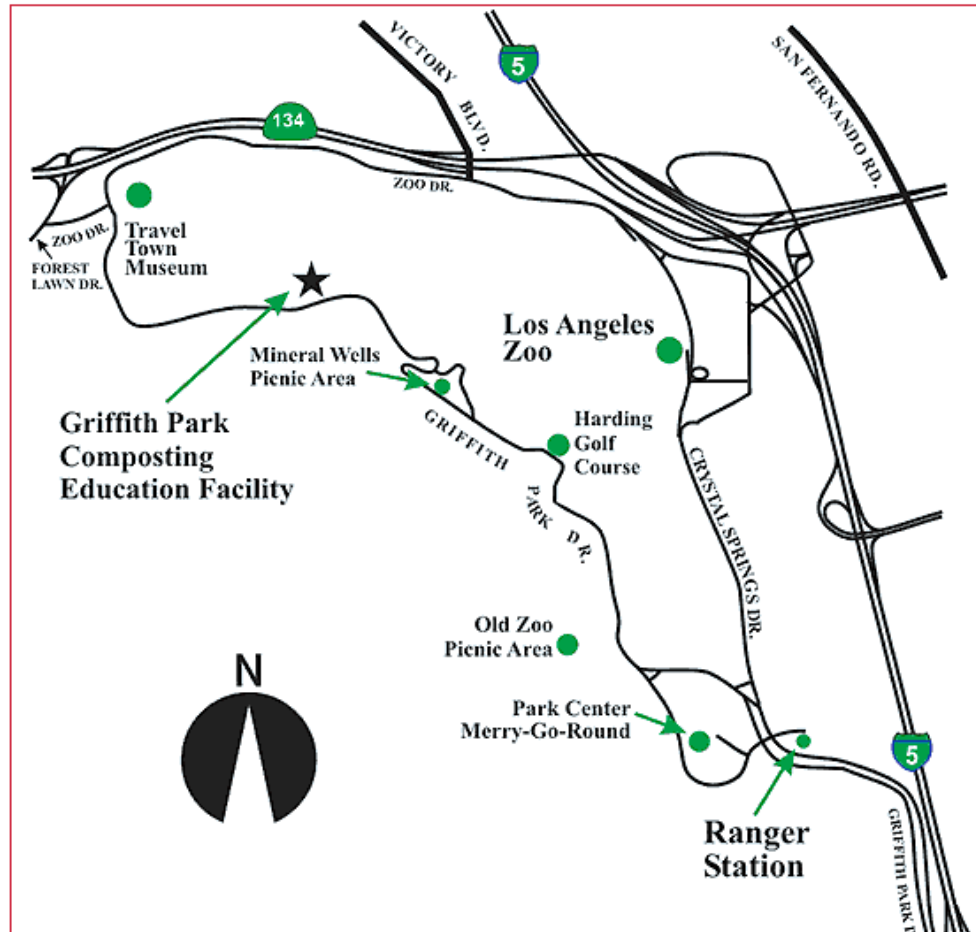
Service request 

Search
Advanced

Backyard Composting

■ **Griffith Park Composting Facility**

5400 Griffith Park Drive
Los Angeles, Ca 90027



IV. “BeverlyHillsHomestead” Blog

My Full Blog, documenting the journey, a must-see online!

Contains daily journal entries and pictures

<http://beverlyhillshomestead.blogspot.com>

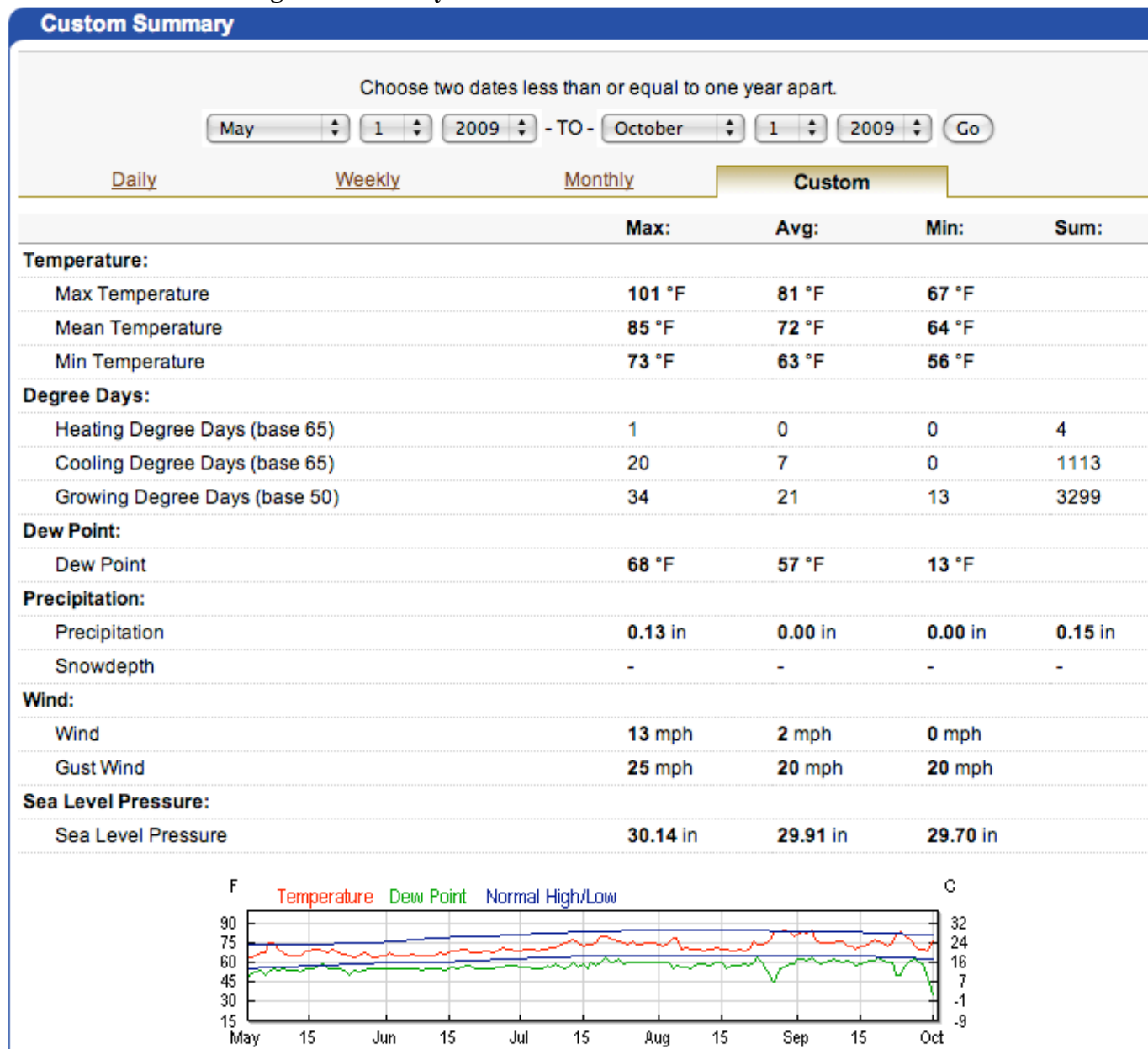
V. Huffington Post Blogs

Two Huffington Post Blogs about garden:

http://www.huffingtonpost.com/susan-smalley/lawns-versus-gardens-in-b_b_220689.html?view=print

http://www.huffingtonpost.com/susan-smalley/garden-instead-of-lawns-i_b_243143.htm

VI. Weather in Los Angeles from May – October 2009



VII – Backyard Garden Journal

Day 1, May 12.

Yesterday I got back from Vermont and today I decided to lay out the garden beds. To do this I went to Koontz hardware and purchased a wheel of garden twine. At our house we had many chopsticks laying around and we took those, the twine, and a ruler and laid out all of the garden beds. It turned out to be sort of funny doing all of the calculations as it almost seemed impossible to figure out the right measurements. By days end the garden was laid out with twine.

Day 2, May 13

Today, like yesterday, had its funny moments. I started the day trying to figure out if the newspaper I was planning on laying over the grass (a mixture of La Times, NY times, and Wall Street Journal) was petroleum or vegetable based, as that would determine if I could use it. I scavenged Google and searched all over the internet and found out that 90% of national newspapers today are soy-ink based. This was a switch made in the 1990's due to soy's superior, cleaner (and cheaper) production and manufacturing. To make sure the majority of the newspaper was definitely non-petroleum based I called the Los Angeles Times (as that is what makes up most of the newspapers in my house). When I called the LA Times I was connected to an operator and I asked her the question (is your ink petroleum or vegetable based?) She seemed to not know the answer to my question and transferred me to her supervisor. This was funny because he was a crazy frantic man asking me questions about who am I, who do I work for, what's my name, and many other very paranoid questions. I think he thought I was part of the EPA or something. He told me he couldn't answer this question because he didn't know what I needed it for and I told him it was for a simple gardening project and I just wanted to know. He eventually transferred me to his superior (haha) who I finally got a clear answer from saying All of the ink used for the Los Angeles times is Soy-Based. That was comical. After completely learning about the products I was using I marked out the garden design using chopsticks and garden twine. It looked pretty smart and I took a picture.

Truck Broke Down

While driving to the compost sharing program in Griffith Park, the truck I was driving in broke down. I was on my way driving down Cahuenga deep in the valley. It was hot, probably around 100. At one point my car brakes almost went out. Finally the car started steaming and it turned off. I proceeded to get help and a man helped push the truck into the nearby gas station. Now I was in an emergency sitting in a gas station in a shiny 52 Ford Pickup. Everyone was coming up to me and saying how great my car was. I got picked up by two grease monkeys (Vince) and they duck taped the broken tube and drove it back and also dropped it off at my house. At night I decided to rent a truck from Budget and try my luck again the next morning.

Day 3, May 14

In the morning I went to pick up a Budget truck/van in Santa Monica. After I picked up the truck I had to leave our Prius on the adjacent street. I went with Danielle

and started the drive back to the compost facility. Once we arrived at the Griffith compost facility we drove up to the compost pile and began shoveling this very partially decomposed highly manure smelling compost. There were another two men grabbing compost at the time (for their veggie garden) and we talked to them for a while as we loaded around a half a truckload of this compost. During this visit we met the man in charge of the facility and he felt compelled to tell us that this compost was composted sewage from the Los Angeles Zoo (agh ok...thanks for telling me)

After we left the facility we drove back to my crib and began unloading wheelbarrow loads of this compost and layering it down in a small layer over our newspaper. Once all of this was used I decided what I had imagined was not going to be suitable and we were going to have to order bags of organic topsoil as this **free compost** was too high in concentration (of nitrogen and other nutrients); it would definitely burn plants put in the garden.

Nevertheless this was a great way to start the garden as when doing a no-dig newspaper style garden like this one issue that arises is the uneven nutrient content the newspaper provides. Simply put, newspaper is basically all carbon (a nutrient which feeds not only the plants in a garden but also the microorganisms living in the soil). And the microorganisms, like humans, need a balanced diet (being equal parts nitrogen and carbon). Therefore without providing them with a supplement of nitrogen (as I did using the composted manure) the microorganisms would otherwise suck all of the available nitrogen out of the soil and subsequently there would be little to no nitrogen to be used by the plants for vegetative growth. In turn this would lead to a very poorly growing garden. This is a very important aspect of all no-dig newspaper gardens!

Day 4

I met with Uriel our garden/landscape/ master and talked with him about figuring out how I was to get all of this topsoil for the garden. I already had called many centers to deliver the needed amount to Beverly Hills and was told it would require any of these companies to get a Beverly Hills permit. The permit is a pain and is expensive so we decided not to deal with it and instead decided to buy bags of organic topsoil. Before buying bags we needed to get the border in the ground. So I went to Home Depot and looked at the borders they had in stock. We wanted to get a nice one and they didn't have it so we ordered it online. During our stop at Home Depot we purchased seed starting kits and went to my house to start a whole bunch of seeds. We started marigolds, alysums, tomatoes, peppers, kale, and many other flowers and vegetables. We also had a helping hand with our next door neighbor's daughter who helped out. After starting many wells and watching the Lakers with Game Seven we stopped.

18 May

Until now I have been at a standstill, waiting for supplies to arrive, talk to my gardener, and let the seeds grow and today I am trying to get this stuff finished. This project has created many headaches every day and I found out today that my mom doesn't think she'll like the border we purchased. That means going out and buying a new boarder for the garden. Aside from that I bought a blueberry bush and a peach tree at the local gardening center.

May 20, 2009

Uriel arrived at my house at 830 this morning with 20 bags of topsoil and three rolls of borders. We started work early and began putting in the border. Putting in the border was harder than expected as I had already put down the newspaper and a layer of manure compost on top. This made it difficult because as we were measuring the perfect dimensions there would often be an issue of being outside the newspaper or on top of it. This created a more difficult situation than if we had done the border before putting down the newspaper. After we finished laying down the border and putting stakes in we added a little extra newspaper to cover the areas of grass still exposed. Once this was all finished we began emptying all of the bags of topsoil over the garden beds. After emptying all of the bags we realized we needed probably an extra 20 some bags to make the topsoil deep enough for a vegetable garden. After lunch we went back to Anawalt Lumber and picked up 20 more bags of soil. We came back and emptied these down. After it all we smoothed all of the soil out with a rake and watered it in throughout so it didn't fly away with the wind. After this I checked on my germinating seeds. There were a few germinated, mainly the marigolds, and watermelon, I think a few corn, and some random ones. Basically for the majority of the garden, I decided we would have to purchase small plants to start it. But that's ok, because it's the experience that matters. We decided to meet again (Uriel and I) later next week to install the plants into the garden. Many people have already told me that they love the design of the garden

And on another note I found a spider mite eating my peach tree that I removed as well as a grub eating at one of the fruits that I also removed. Currently there are no pests on the peach tree and it is doing a lot better.

May 30th

Still most of the seeds haven't sprouted and I believe it may be because trying to sprout seeds outside in a semi-controlled environment is very difficult. I checked on a few of my pepper seeds that I tried to start using with a paper towel method and they seemed to be sprouting fine. This led me to believe that the paper towel method may yield higher rates of success than using jiffy pellets. Therefore this morning I decided to try and sprout some more tomatoes, peppers, lettuce, mustard greens, and other vegetables. After doing this I put the seeds standing upright in my closet.

A good Site on Vertical Gardening

http://www.gardeningtipsnideas.com/2008/07/starting_a_diy_vertical_garden.html]

June 3, 2009

We (Uriel Rohas and I) began installation of the garden today. I went to the garden supply store and purchased two flats of white alyssum for the border and another two flats of marigolds. We also got five tomato heirlooms, a lot of pepper plants (both ornamental and regular bell peppers) arugula, and swiss chard.

Along with this I bought a trellis and two soybean plants to grow up them.

We also have two squash plants etc. While none of my seeds made it big enough to be in the garden I learned that for the upcoming cool season I need to sow more seeds than I ever thought. The fact that most of my seeds eventually germinated (~50%) helped me

understand that I need to sow double what I plan to use. Furthermore the flats that I used to grow my seedlings are too small and I need to have larger flats to make a sturdier plant for growing in order to transplant them into the garden. Currently to go along with the backyard garden produce, I have a watermelon plant growing on my balcony, a few morning glories just sprouted, there's a peach tree, and I have a blueberry bush (although it is not producing this season). The garden took most of the day to install during which I got to know Uriel Rojas (our gardener who is also a professional Charros man) much better. We went to his family restaurant Talpas on Pico and Sawtelle and he ordered me the house special. We sat, talked, drank, and got to know each other and then we went home to work. On the ride back he played me some of his favorite Mariachi music and I was indulged in the truly spectacular world of Mexico.

Lavendar

Begginig with an excerpt from what I believe is June 4th-5th

Today, Danielle (my girlfriend) and I went to the Dervaes homestead (the same day we went to the Huntington Botanical Garden). It was cool and we took some pamphlets. For more info on this Google Dervae's Family Homestead...Basically it is an urban mini-farm project located in Pasadena. It's pretty inspirational and it was a little sad that we couldnt take a tour of it; though, nonetheless it is amazing.

After that we went to Chinatown and bought a banana tree for 20\$. When I went to transplant it I noticed it was sitting in the hardest clay I have ever seen and it was infested with snails and bugs in the root system. This was very unhealthy plant. It also had a lot of dirt on it. I cleaned the leaves and I transplanted the tree into premium potting soil. After a few days the tree is looking a lot healthier.

Noticed soybean plants being eaten. Don't know cause yet.

Found out soybeans being eaten by slugs.

At night scattered ladybugs for pest control.

Also made a perameter of coffee grounds around the plants that act as a barrier for slugs and snails.

Next morning realized that most of the ladtbugs I scattered either flew away or were already dead :(...I guess thats what you get for forcing ladybugs to a location rather than promoting a healthy natural habitat that ladybugs will be attracted to. oh well.

Also I decided on planting lavender and chives as a background to the center two beds. These two plants do a great job of complementing each other and provide a good source of flavor and food. Although these plants didn't fill all the gaps, I decided to put the dill/fennel in the back (done on a later date).

June 18th

Put in three more dill plants and three more fennel plants to act as background foliage in the second two garden beds. Not only will these plants provide delightful feathery foliage but they will also grow tall and provide more shade for the plants I've planted in the back

garden bed (which prefer shade yet are currently getting too much sun. Also dill and fennel (being great culinary herbs) attract beneficial insect predators such as the lacewig, ladybugs (THERE WE GO!!), hoverflies, and parasitic mini wasps. Not only do these plants attract beneficial insects but so does all of the sweet alyssum planted as a border to the garden. These tiny insects are good at eating aphids, mealybugs, and other such pests to the garden.

Another sort of biocontrol I initiated is using beer to attract slugs. I noticed one night (I went out with a flashlight to look at the soybean plants) that they were being eaten by slugs. To prevent this, I dug three holes in the background of the garden and dug in a three solo red beer cups. These I filled 80% with beer (the yeast attracts the slugs and they fall in and drown). I checked the next day and oh boy I caught a whole bunch of these slugs. I also noticed that my soybeans look less ruined.

So finally the first season garden is finished and people seem to love it. My mom's meditation group (they come every Friday morning) won't stop complementing me on how great the garden looks.

Another thing that happened to me is my mom wants lettuce in the garden. She said all her other friends have it. But I know if I plant lettuce now it will be bolting by mid July and also we have no more space in the garden. I decided this wasn't a feasible idea. Today I tied up the two basil plants in the back corners because they kept flopping over. I put in two stakes (fallen off branches from nearby trees) and tied up the basil so it now looks more presentable.

Other things that happened recently in the garden are : I planted two sets of three edible Nasturtium flowers next to the squash plants. These I grew from seed and am pleased to know that they made there way finally into the garden. This can also be said about two amaranth plants I just planted in the sides of each garden.

June 23

The squash had powdery mildew. I treated this with a garlic spray that I brewed in my house. We'll see how it takes.

Just ate quinoa pesto pasta with grilled veggies that was unreal. Ate with friend Mgabe and Danielle. The pesto we made using the finest basil tips from the garden. We made a vegan version of the traditional pesto only using basil, 2 packets of pine nuts, garlic, and olive oil. We blended it using the Magic Bullet and it was sooo good. We did that 3 days ago. The garden is looking bigger today. We have a lot of tomatoes that are ripening.

Yesterday we made an arugula salad with my mom that was soo good. In total we harvested just enough for us to eat it all. The soybeans are taking some time. And the past few nights Danielle and I have gone slug hunting. Last night we went out with chopsticks and took down probably around 40-50 slugs. They are living in a symbiotic relationship with the mushrooms that are growing in the area (which also only come out at night) and the slugs eat the mushrooms. The problem (we think) is that when the slugs are finished eating their mushrooms they go onto the plants (as noted last week when I caught some on my soybean plants at 3AM).

Anyway got to go finish eating my grilled veggies.

June 29th

The powdery mildew was still on the squash and I do not believe the garlic spray was working. So last night I tried a new spray that is supposed to eradicate up to 90% of the powdery mildew on contact. This spray is 1 part milk to 9 parts water. It was discovered in the 1990's by a New Zealander and supposedly works just as good as commercial sprays. Last night I sprayed the two plants and this morning when I checked it looks as though the powdery mildew is going away (ie. the fungus looked less healthy today than yesterday). This application is repeated once a week and I will repeat next week.

On another note I harvested both of my cilantro plants for the first time today by cutting off the top third of each plant. Along with this I also harvested some swiss chard. Both of these plants I used to make a tofu scramble. The ingredients were, Thai Basil, Cilantro, Swiss Chard, Onion, Bell pepper, Ginger, Garlic, Tumeric, Coriander, Cumin, AMY's Mild Salsa, and crumbled hard Tofu. My sister and I ate it with tortillas and it was excellent. She was amazed at what kinds of dishes can be inspired through a single harvest in the garden.

Furthermore my peaches are ripening everyday; I have 4 in total. And my wathermelon plant is getting huge. I am training it to grow upwards and out so that I am able to grow some Bunching Red Onions in the front of it. Another sight is my blueberry bush that looked slightly haggard this morning; it is beginning to appear that it may have some chlorosis of the veins (maybe iron).

July 7th

Found out that the blueberry bush was definitely suffering. It was in direct sunlight on the center of my balcony and so (while blueberry bushes are supposed to be in full sun) there was too much sun because we live in southern California (zone 10) and my balcony is all white creating a burning effect on the plants leaf edges. I first tilled in some Alazea food into the first few inches of the blueberry bush pot (this is highly acidic which is necessary for the roots of the bush to absorb nutrients). The reason the bush's leaves were coming out light lime-colored looking sick with chlorosis was because the soil was too alkaline. So in a few days the problem should be fixed. To fix the issue of sun I decided to put the bush in the corner of my balcony which offers (partial) sun. I will keep this issue updated as next year I hope to have a multitude of blueberries.

And now to talk about some issues.

1. Aphids, Black Mites, other pests on balcony

The other day I was looking at the general feel of most of the plants on my balcony as I noticed they all looked a little under the weather. It started with the marigolds looking twisted and curly with leaves turning brown and dying. The other plants didn't look as bad although a lot of them (mainly the bell peppers) looked like they hadn't grown in a week and knowing the conditions I was giving them I expected them to be getting huge. So I got in closer to take a look and at first what I saw (on the peppers, watermelon, and

on some tomatoes) was that they were infested with green aphids!!! This took me by surprise as the problem was already in a pretty hectic stage. At first, after this discovery, I went to each and every plant on my balcony and checked them entirely squishing all the little buggers I could find. I went about the pest problem in this way for a few hours until I felt like I had done a good job; then I decided to brew up some natural pesticide in my kitchen. For the first pesticide I blended garlic cloves, extremely hot peppers (the colorful ones) from my garden, lemon rind, and any other thing I thought would make a smelly burning cocktail. After brewing this I tested it out on one of my cilantro plants (that was fully infested) and gave it a day to rest. The next day the plant looked fine but this concoction I had made I think may have been too strong. I didn't want to spray it all over my plants. I decided to brew up a simple pesticidal soap using one tablespoon of Dr. Bronner's Eucalyptus soap to about a quart of water (to this I mixed a little amount of my earlier cocktail) and made a stinky soapy natural spray. I used this all over the marigolds (which were infested with hundreds of black spider mites I believe and also these slithery insects that were pretty big). The next day It looked like the potion had worked pretty well as a large majority of the pests were dead. The aphids turned a yellow dried-up looking color and the little spider mites just looked dead. I decided this spray was probably pretty safe and effective so I began spraying it on all of my plants. Now two days later it looks like the pest problem is getting in check as the plants are just beginning to come back to life looking a little healthier (at least a few of the bell peppers have already grown dramatically).

Along with the three pests already mentioned there were also tiny red 'spider mite' looking creatures (though less in numbers) that I found on some of my plants. I think the main thing is these plants were ready to be transplanted probably 2 wks ago and since there were just sitting in such a crowded environment for too long a pest problem broke out. Now I have the plants spaced all over the balcony as I do not trust putting them so close together.

2. Finishing the Arugula (harvesting it all as it begins to bolt)

Last weekend we harvested about a thousand grams of arugula from the garden that was used to make endless salads over the weekend and throughout the week. It was the best arugula as I like it spicy and this stuff was just at the perfect spice. Perfect timing too, as now the arugula is bolting and beginning to flower (making it not good for consumption any more); this happens due to the fact that we live in zone 10 and it gets very hot mid-day causing plants to mature early and bolt (this was expected). Now there are arugula plants bolting and I have yet to take them out of the garden. I think I will be replacing them with spinach that is highly resistant to bolting. I want to plant lettuce but this spot during this time of the year it would never work. I am contemplating attempting to grow some butter lettuce in the shade of my tomato plants as I think they keep the temperatures under them at a cooler degree and it may be possible to grow them in their shade. This would be an excellent example of interplanting/companion planting.

Since my family is largely vegetarians (or mainly eat vegetables) we eat many salads and the arugula salad has been so much fun for us all this whole past month. The best salad we made had an arugula base, it was covered in strawberries, mango's, and peaches with walnuts and pine nuts and only the lightest lemon and olive oil dressing. It was godlike

eating it outside on a hot summer day under the canopy looking at my garden. Everyone (my family and friends who were there) could not believe how good the salad was!!

3. I went out to the garden today to check on the vegetables. There are a few items that concern me. One is the fennel and dill. The dill is flowering which is just fine as the flower should start attracting beneficial insects to my garden (ones that eat the pests). But the fennel next to the dill is hurting. It looks very sick and out of all six fennel plants only one has really taken to full foliage; all of the others look sick. I'm ok with having the dill flower and not using it for culinary purposes as much but it would be nice if the fennel starts to take hold as I would like to use it for cooking. I think what I am going to do is make a concoction of the fish emulsion and feed it to my garden early tomorrow morning. It says to feed the plants every three weeks and it has been about that time. I was looking at the zucchini plants and I have a few zucchini coming in. One is already pretty big. The powdery mildew completely went away with the application of the milk-fungicide. Although taking a closer look it looks like it might be coming back in the bottom of one of the plants. So today I am going to make another magic milk potion and spray the plants again. I also noticed a little powdery mildew coming on one of my tomato plants which I will put to rest ASAP!!

4. Start planting seeds in garden for next season.

5. Take a closer look at the watermelon and found out it was a pumpkin. Haha that was pretty funny. I thought it was a watermelon because that was the row I took it from but then as it got huge I wanted to look up what the major pests for watermelons are and as I was looking it up I noticed that the plants I thought were watermelons were actually pumpkins and vice-a-versa. So now I have a huge pumpkin plant on my balcony one which I had thought was going to produce watermelons. ~~~~Ridiculousness

6. Ripening of the peaches

The peach tree is booming. The three peach cluster is really ripening; they are all looking a dark ruby red. While I only have three I think they will be the best peaches ever. I should probably prune but for some reason I just don't like messing with things like that. I feel that the tree can maintain itself and like my no-dig garden, I will allow nature to do the process. There have been no signs of pests on it although I am worried as it is located on the same balcony experiencing heavy pest issues.

7. Back row failure --planning for Fall

So the back row of my garden is truly being wasted. I planted these bootleg flowers that I don't even like and the soybean plant is producing the weakest fruits I have ever seen. I decided to turn the back plot into a place for pumpkins and watermelons to grow, while trellising some pea plants on the trellis. It still needs to be developed but basically where it is right now is not sufficient.

Besides the back row there are a lot of other things I am planning for the fall garden. First my parents love cut flowers like zinnias and have asked me if I could grow some for them. I am going to try to grow these flowers and we will see what happens. Hopefully I

can figure out some companion plants to mix in with them, maybe some sort of food hopefully or another flower that is attractive and attracts beneficial insects.

8. Worm bin at second level!!! First ingredients pulp from new juicer

My worms have finally eaten most of the newspaper I gave them a month ago and turned it into a fine dark rich compost. So it is time to put the second worm bin on and begin adding food to it. After buying a new juicer and juicing some crazy concoctions I am using all of the pulp and feeding it to the worms. After one day they are already at work eating the pulp. Also there are none of those awful vinegar flies I experienced last time I put food in (which was too much food for the worms). So finally it is working properly and I can't wait to begin recycling all of my food waste. A funny story related to this is last week my friend Ben and I took a basic knife skills cooking class and without knowing who my knife cutting partner was I ended up having full and deep conversations with her. I later discovered she was a pretty famous actress and her pretty famous husband singer, writer, comedian. Anyways at the end of the class her husband was collecting all of the vegetable scraps in a large trash bag and I asked him what it was for when he told me he feeds it to the worms. I was shocked, they have a worm bin too! I explained to him my issue with my worm bin and he said give it time and a tip is to blend all of the food scraps so it is easier to break down for the worms. That was great advice that I have taken with me and am sure it will help for the future.

8. Taking more photos.

July 20th

As the summer progresses so is my vegetable garden...

While I was away last week in Panama for vacation with my girlfriend, my mother (Sue Smalley) helped keep track of the vegetable garden. Basically I needed her to water my plants on my balcony everyday and just keep an eye on the vegetables as they usually are pretty good at maintaining themselves. When I got back I went to see my garden and oh was it flourishing. Two of my tomatoe plants are topping 6ft!!! That's my height and to think they are growing right over our grass lawn is so amazing. I can honestly say I think these are the biggest tomato plants I have ever seen. Plus they have almost no damage whatsoever (except for a few yellow leaves toward the center). While none of the tomatoes are ready to eat yet there is one that is turning a beautiful red color and will be ready to harvest hopefully within the week. Upon my arrival home, I looked at the two zucchini bushes that I have been having problems with in terms of powdery mildew. They both look heavily infected again and I think it is time to spray them again with a 10% milk spray. Other than that the plants look huge and they are starting to pop out a lot of little zucchini flowers telling me that they are ready to start making zucchinis. Before I left for Panama I decided to get as much work on the garden done as possible. First I removed all of the flowers in the back row as they weren't working and I planted two watermelon plants on either side. After that my parents wanted to plant some flowers (that can be cut for decoration) within the back row so they did that and I hope to be able to weave the watermelon throughout these flowers and, depending on how large they become, train them to grow up the trellis that currently houses the soybeans.

The soybeans are all producing fruit although they are very measly and do not look that healthy. I am leaving them in the soil at least until the watermelons reach the trellis or the weather starts to cool down so I can begin planting peas in their place.

Also last week I decided to uproot the arugula that had become bolted due to mid summer heat. That I replaced with edible marigold flowers which I had been growing on my balcony (the ones that had a pest infestation though no longer do.)

Currently most of my plants are flowering, which is pretty although takes away from their work in the garden; when herbs flower their culinary use is no longer as good. The dill and fennel are flowering (this is nice because their flowers are not only pretty but they attract many beneficial insects) and so is the amaranth.

It is time I do a huge harvest once again: the plants that need to be harvested are the basil (both thai and regular), the chives, sage, lavender, and everything else that is looking very big.

Upon reflection, it is truly amazing that this garden is a reality when only two months ago the land was nothing but grass. This project has truly showed me something and allowed me to understand no-dig gardening as well as allow my friends and family to see 'the magic' take place. With no more than a foot of topsoil every plant I planted has been doing phenomenally and there are tomato plants that are taller than me!! I find this astonishing. And now I know that no matter what people say or what books I read I KNOW that A MASSIVE vegetable garden can be planted on top of a grass lawn without even removing the sod.

The pest infestation that I experienced last week is completely gone. The best solution to solving it was to take all of the plants off my balcony and to spray them vigorously with the garden hose. Then instead of putting them all back clumped tightly together on my balcony I allowed them to be spaced out and recover. The result was no pests by the time I returned from a 5 day vacation. The main reason the pests got so bad was because I had clumped them too closely together that when one plant got infested so did all of them. Even with the proper companion plants, planting too close in a sense created a sort of monoculture that was very easy to be infected.

Another note from my balcony: The pumpkin plant is getting huge and I currently have a pumpkin about a half a foot large. I trained it to wrap around my balcony and that is just what it did (although I was away during this crucial period and for that my mother gets credit). The peaches on my balcony are huge and ripe and yesterday I picked the ripest one and ate it. I did this mid-day and I have never tasted any peach so good. Although it was not as sweet as some peaches it was all warmed up from the midday sun and I could taste the warmth and freshness which contributed to the best peach eating experience in my life. Now I have two more that need to be picked but I want to pick these in the afternoon sometime.

Another plant to note is my blueberry bush. When I came home from Panama it looked completely burned all over and was probably 50-60% dead!! AGHH... This was no ones fault as the heat of the summer got so intense while I was gone that it burned the delicate

blueberry bush leaves (even though it is a full sun plant). I moved the bush to a shady location underneath a huge jacaranda tree in my backyard and am planning on leaving it there until it hopefully returns back to life.

The banana tree I have is also getting pretty big as a new leaf emerged last week. This leaf is now full sized and the plant is looking very healthy. I have so many plants in my house and in my garden right now that if I even tried to write about them all I would end up writing a book.

This experience (while still in progress) has taught me such a great deal about gardening. My mother is so excited everyday to see what is producing in the garden and this has been a great way to help teach her how to garden. And while this is just the first season for my (hopefully lifelong career in gardening) I know that while everything is not perfect (far from actually) it is perfect in the sense of what I am learning. I feel as though I am reaching an understanding of certain plants and gardening in general that is not possible to learn through books and is something that only I - with the help of nature - can understand; this journey is one that is guided by a light within all things.

Peace out July 21st A TOTAL ECLIPSE OF THE SUN

July 27th, 2009

So recently I have been eating a lot of flowers. I have these dark ruby majestic like nasturtium flowers that have the most exquisite taste. It is light with spicy undertones, matching those of arugula (which makes a great complement for the top dressing of a salad- as it's pretty and tastes good). So far the only person who won't try them is my father because he has heard so many horror stories of people eating flowers and dying and he just won't eat it – its pretty funny.

Another flower that we have been recently grubbing is a bright orange French marigold edible flower. These flowers are the perfect match for the nasturtium as they are small and sweet while the nasturtium are large and spicy. Together they make a wonderful treat.

A few days ago I thought it was time again to have a full harvest. This time it was basil (both the purple thai basil and the regular green basil), dill& fennel, sage, tomatoes, and the garlic chives. I'll begin with the basil and go through each.

Basil: As the basil is flowering tremendously and is very large, to encourage one more veg growth and to harvest the flowers, I cut most if not all of the plants down to half their size. The purple flowers my family loved and we decided to fill all of the flower vases in my kitchen (ones that we usually purchase flowers for) with fresh basil flowers (a mix of both purple and regular green flowers). This was great because not only was the aroma in the kitchen wonderful but we were able to use an excess of herbs (ones that would otherwise go bad) for decoration around the house. Mixed amongst the basil flowers I cut a few dill and fennel flowers.

Dill/Fennel: As I've noted not all of the dill and fennel plants are very healthy and a few (mainly ones in the sunniest of locations) actually died. But with the healthy plants that were flowering (and attracting so many wonderful insects) I decided to cut a few flowers and treat them as ornamentals. The dill flowers and purple basil flowers looked so great in the kitchen, I think that I may grow these plants just for that purpose. I realized my family doesn't use these herbs (fresh out of the garden) for culinary use and since they are so beautiful and attract so many wonderful insects (the flowers do), I'll grow them, not as I would for vegetable use but I'll encourage them to flower...

It is also notable that the healthier of the plants are the dill (the fennel didn't do so well). The fennel seemed to be happier in the shadier locations of the garden (even though they are full sun plants). After harvesting the basil and dill and fennel and creating beautiful ornamentals in the house I went back outside to harvest some sage (that has yet to be harvested).

White Sage: for the white sage I began by harvesting only the outer edges of each plant keeping in mind to make all of my cuts around the same length; my plan was to create sage bundles for burning. I collected a total of four or five bundles of fresh sage and let it sit out and dry for a couple days (I read that sage needs to only dry halfway and then be bundled otherwise it will A) mold from too much moisture or B) crumble from being too dry). Once the sage had dried to the proper amount, I took each bundle and sort of layered them together making what I thought was a sage bundle. I quickly noticed that all five piles I had cut were only enough to make one full bundle of sage.

I made one bunch, took some green garden twine and bundled it together. Then I hung it in my room to dry for a few days. I think it is ready to be burnt although it is not as white as I recall store purchases are, but I will try some out soon!! This was a fun experiment because not only do I love sage bundles but they are actually native to the Indians who once lived right here in Beverly Hills hundreds of years ago!! It gives me a feeling of connectedness knowing that I am doing something that people had practiced for centuries right in this spot.

Tomato: After harvesting the white sage and beginning to dry it I saw one Black Krim tomato looking ready to be plucked. So I went over and plucked it. We sliced it up and ate it with a fresh salad (which the nasturtium and marigold flowers too) and it was hands down the best tomato I ever tasted. I think this is one plant that I will definitely grow again and save its seeds!

Over the next two days, three more Black Krim tomatoes were ready to eat and after three days of eating the best tomatoes in the world I don't think anyone wanted to eat the basic commercial red tomato that we had sitting in our kitchen; I know I didn't when I had it on my veggie burger (we had eaten all the Black Krim ☺) .

On another note there are still a lot of tomato flowers that are dropping off (blossom drop) and I think it may be due to lack of pollination as a similar issue is occurring with the zucchini plants*.

*The zucchini plants are flowering and starting mini zucchinis only to have the flower die of and the zucchini shrivel up before it fully matures (I read this had to do with a lack of pollination and I actually went out and pollinated a few on my own just to see if this was truly the reason) Also the zucchini is still suffering from a case of powdery mildew (I am repeating last week's treatment of milk/water which really seemed to work) The mildew is also on some other plants (such as the Swiss chard and my pumpkin plant and I think I am going to try the milk method on these plants as well)

Finally after a lot of harvesting I decided to harvest the garlic chives. These plants are everywhere in my garden and like the dill/fennel are doing tremendously better in partial shade. They are lush and full whereas under full sun they are thin and weak looking. Anyhow I harvested the outer edges of the chives and brought them in for proper storage. I read chives can be stored for up to a year in a freezer so I cleaned them up, chopped them down to one inch chives, and froze them in the freezer. It is now a week later and they still taste very fresh! That night we had baked potatoes with chives.

So now I have one new tomato forming, it is called momotaro and is a very small grown level tomato plant with by far the most tomatoes on it. This heirloom variety produced bright dark red tomatoes – mine is currently going from orange to red it will be ready probably within two days.

On another note the amaranth I planted is huge on the full sun side and is flowering beautifully while on the shady side it is very small and weak...this lets me know that I won't be planting amaranth (or any other African vegetable plants) on the shady side ever again.

August 10, 2009

Just got back from a great adventure to Kauai. Visited a permaculture farm/garden, met a world-renowned organic landscaper, and had a blast.

Anyhow, on return to my garden I was happy to note that it was not a disaster, (as I had many nightmares) and in fact the garden was looking very healthy. Eager to see how it was upon arrival I took a flashlight and checked it out around 11pm last night. Other than seeing what I saw this morning I should note that there were no slugs or snails as had previously been a huge invasion during the early summer months. Maybe it is because they don't want to trek into the garden due to fear or that a sort of ecology is developing in the garden where the snail/slug populations are being kept in check due to natural predators. That would be ideal!!

Also I want to thank with a great deal Uriel and his team of gardeners that kept this garden alive for the ten days I was away. Also ANNA my housekeeper was in charge of keeping my plants on my balcony alive and she did such a great job. Thank you to all who helped if I have forgotten to add your name.

Anyhow, garden update:

Zucchini's: I am proud to say that the zucchini's are back in action. They're finally pooping out some zucchini's. The powdery mildew is not as bad as I expected it to be

upon return and though many of the zucchini's aren't setting and are i.e. rotting off (due to lack of pollinators) they look like their doing much better than previously. Today I think I am going to cut of the dead zucchini leaves and try and clean them up a bit.

Basil & Herbs: The basil and herbs are huge once again with many colorful flowers. It is again time that I cut them back and either use them as ornamentals in the kitchen and or make a ton of basil. The lavenders (both varieties hidcote and Spanish) are doing very well. They all look healthy and the Spanish lavender is beginning to flower a beautiful purple flowers, that I will eventually cut and dry for ornamental use. The sage plants and chives are all doing well and are about ready to be harvested again. While the garlic chives said they produce beautiful white flowers they have yet to do so.

Dill/Fennel: The dill and fennel I planted have either A) completely died out, which with the decayed leaves I have left them in the garden as a mulch. Or B) overgrown so large that they are falling over and shading out other plants. I think they were probably not such a good Idea for the garden as many plants do not like them much...next time I grow them I will be sure to put them in their own area away from other plants and vegetables.

Amaranth. One amaranth plant is looking huge and beautiful (the one in full sun) and is getting so big it is going to need some support to keep it from falling back. The other amaranth is short and unhealthy, as it is in a very shady wet location (not the ideal spot for this African plant). Next season I realize that while I thought the garden sun and shade was symmetrical is actually not and in reality the left side of my garden is much more shaded and water holding than the right side of the garden. Now I know for the future either to not plant the garden so symmetric or to choose plants (varieties etc) that fit the conditions of the area.

Watermelon: The watermelon plants are growing great and I hope that I will be able to fruit a few before it gets too cold. They are sugar babies and therefore ripen quicker than the larger variety though we will have to see what the future enlist.

The Soybeans: Complete disaster.... beginning with huge amounts of insect damage and ending with short bush style plants that wouldn't ever grow up a trellis. I didn't even eat any of the peas (and being that I bought them from a Home Depot Like center) I don't even know if I want to. But either way they are nitrogen fixing and therefore have helped the soil's integrity in the area providing it with nitrogen and good soil organisms. I think I will try soybeans again although I know not to try and trellis them and I will grow them in a different location of the garden. (Maybe where the tomatoes were)

Tomatoes: While I was away seven large tomatoes ripened off (I believe they were from the Oregon spring variety) although it was not documented, as I was not in town. Today there are a few tomatoes that are almost ready to harvest. But generally the tomatos do not look very happy for two main reasons. A) Most of the tomato plant foliage on all of the plants is dying from the bottom half. I have read this to be normal although to me it looks like a problem. And B) There is simply just not enough Tomato's setting. The tomatoes are still experiencing a high level of blossom drop and I only wish I had more

pollinators!!! After this experience I know in the future I am going to plant huge amounts of honeybee attracting plants and other plants that attract insect pollinators. It is not just a problem with the tomato's but also with the zucchini's, pumpkins, and peppers. I desperately need more pollinators for my garden and have learned that I need more flowers (perhaps I will grow some sunflowers or something). Other than that I think I'm going to feed them fish emulsion today as it has been +3wks since their last feeding and I know how tomatos are one of natures heaviest feeding plants.

Marigolds and White Alyssum: The flower boarder of marigolds and alyssum is looking nice and the alyssum has not gone to complete disaster of browning which I am worried about due to L.A.'s intense heat. The marigold flowers need to be dead headed and I realize that I definitely need to invest in a composter (as I can't keep letting everything just sit in my garden A) it looks not to nice B) it uses up available nitrogen and C) I don't want to be planting my weeds for the future.

The zinnia's are doing great in the back row and only are in need of some dead heading to keep them flowering.

Lastly I have begun saving seeds and will see how well I do it. I think I'm also going to start gathering seeds from other farmers market produce and save them for next year. There is a lot going on in my garden right now and it is a little overwhelming but if I take it step by step I believe I can resist from being overwhelmed and I will continue to learn from my experience.

***SITE FOR PLANTING DATES FOR LOS ANGELES

<http://www.digitalseed.com/gardener/schedule/vegetable.html>*****

August 17, 2009

After being back home for a week and tending to this wonderful garden I've noticed some plants that have taken a "stronghold" to the garden while others are beginning to fade away and die out. Furthermore I created a design for the winter/fall garden that is focusing on replenishing and building the soil, creating mulch, experimentation (*seed balls), and creating permanent bed spaces. Also over the week I picked up some garbage bags full of free Los Angeles city mulch and used it to mulch my garden. And Finally I've decided to purchase soil improvement stuff from Hendricks the organic landscaper I met in Hawaii.

Anyway, to begin;

The garden has been continually producing endless amounts of basil for my family. We are at the point of which we continually have too much. We make pesto and use it for decoration around the house but still find that we have bags and bags of it leftover. This is an important step in understanding the needs of my family and the rate of my garden. I know that I planted too Much Basil for my family and next year I will plant a lot less maybe only a third of this year. Also I've noticed that my family loves the purple

ornamental basil and doesn't really take fond of the green basil. Therefore I will save seeds of this basil they love and I will try to continue growing it as long as it will last (I've read that basil can be like a perennial in our Los Angeles climate).

Aside from the basil, the tomatoes in the garden are slowing down due to some sort of fungus/disease/lack of pollination or something. I've noticed it for a time coming, and I believe it has to do with powdery mildew (although I have attempted to treat for this) but anyways all five of the tomato plants are dying from the base up. Last week I went around cutting off all of the diseased and dying leaves and by this week it looks as it did before with more and more leaves dying. This is definitely slowing down the ripening of the fruits, as some fruit has looked almost ripe for about a week now. I plan to continue harvesting these tomatoes as long as I can (or until the plants die) and then composting all of the plants. Another reason for this problem could be the underlying soil as this is the first year garden and I planted directly on top of the grass, the root system of these tomatoes could essential be bound and wrapping around itself (not to mention competing with each other) which could potentially be leading to this mass dying out.

In from of the tomatoes, the zucchini plants are looking much healthier; as the powdery mildew is subsiding although the plants are still not being pollinated enough. There are still many female zucchini flowers that look like they are going to grow zucchinis but than the zucchini's begin to grow and then rot away from the base of the flower. I think this has to go along with the tomatoes Reason for Lack of Pollinators (although the basil seems to attract so many bumble bees). I think the zucchini's will continue to produce through the fall unless they die off or stop flowering.

Other than the zucchini's and tomatoes the plants are looking very healthy and I have noted differences that continue to take place still within the plants health (i.e. where certain plants do better than others).

Lastly I have read that dill/fennel do not do good growing in a garden with other plants and most plants do not like them. Furthermore I have read that one should never plant dill and fennel near one another due to risk of cross-pollination. Being that the dill/fennel was last minute contributions to my garden I realize that if I had taken the time to study them I would not have made the same decision to use them.

The amaranth is looking beautiful under full sun (and I tied it up recently because it was getting so large and top heavy) while it looks terrible at the left under the tree.

Anyways I want to begin explaining the concept for the fall/winter garden:

Fall/Winter Garden:

My idea for the fall/winter garden is to eradicate the idea of symmetry in my garden and I have noticed throughout the growing season that the right side of the garden vs. the left side of the garden have very different climates, soil structure, and microclimates, and to think that the two sides can be grown with the same plants in the same place will not work. Noting this I have decided to design each bed separately from each other bringing individual themes to each garden bed.

Furthermore I have decided to incorporate crop rotation, cover cropping and green manures into my garden as means of slowly improving the soil one section at a time. I have decided to follow a three system crop rotation pattern that follows the concept of Heavy Givers, Light Feeders, Heavy Feeders, this is a system for crop rotation I read about in a book of mine and it is important to follow if you do not wish to deplete and drain your soil. Along with this concept I am also trying to develop more permanent beds in my garden (using perennials, trees, and shrubs) to begin to create a low maintenance self-sustaining system. Also I have decided to use the back part of my garden as experiment stage where I will practice Fukuoku seed balls and document which plants grow where and how they do; a process by which nature chooses where and which plants grow.

Therefore beginning with the left hand side of my garden (the side with heavier soil, more shade, and wetter conditions) I have decided to try and grow crops that will A) help till the soil using their deep penetrating root system, B) provide nitrogen to the soil through the work of nitrogen fixation, and C) grow for my garden home-grown mulch to be used in the future and throughout the growing season. The crops that I have decided to grow are Alfalfa, White Clover, and Mustard. Each one being a phenomenal cover crop, mulch maker, green manure, soil tiller (breaking up heavy clay), bringing deep nutrients to the surface, and nitrogen fixate. These crops are very well known for their properties and are well documented. Each one can be further read about and understood for practical reasons although that would be too long of a section for this blog (i.e. Mustard is for phytoremediation, green manure, edible, deep roots, etc, etc...)

This concept I will be using on the front two beds to the left side of the garden. This is essentially a working area where I am cleaning and replenishing the soil.

The next section of my garden (the central sun trap where I've grown tomatoes) (I will be growing an array of peas (nitrogen fixating) and white clover. Along the back of the beds I will grow the peas and in front I will scatter white clover.

In the two sections I grew zucchini I will be growing root crops (aka Light feeders) such as carrots and some beets. These beds will be dominated by short smaller sided carrots and beets and in front will house some marigolds (for pest protection) and white clover as green manure and soil builder. They will mimic each other as both sections receive almost identical growing conditions.

To the right two gardens. The middle right hand garden will become the perennial, herb, Mediterranean style garden, with flowering herbs and medicinal plants that attract good insects and bring life to the garden. Furthermore these plants, mainly perennials, if they are happy can potentially have a permanent space in the garden. Also I have abandoned the concept of lines in the garden and for this plot I am transforming it to clumps, a more informal, and natural feel and look for the garden. The plants here tentatively will be Amaranth, Yarrow, white sage, garlic chives, and Spanish lavender. Hopefully it will attract many garden insects and smell and look very pretty.

To the front right garden bed I have decided to try a similar approach as the middle bed and grow an array of hardy Mediterranean like plants such as rosemary, lemon balm, the

purple basil, chamomile, hidcote lavender, and some white clover, spilling in from the root vegetable bed.

And finally in the back of my garden (the back bed) I am doing two different things. In the center where the soybean plant grew (nitrogen fixer) I am going to plant the only heavy feeder vegetables in my garden. Here I will grow Kale Crops and in front spinach. This is the only area of my garden that can accompany such heavy feeders and I think it will do us good.

To the sides of this vegetable bed I have decided to try permaculture seed balls using a huge assortment of seeds. This is a method of natural farming developed by Masunabu Fukuoku and supposedly it allows nature to decide what plants are suitable for growing where. Basically tiny clay balls are formed, each containing from 10-100 seeds, which are then broadcast throughout the garden and through clay's amazing water holding capabilities eventually sprout. Now there may be a few seedlings that sprout from each ball but according to Fukuoku nature will decide which plant was meant for that specific location and with no extra care at all nature will grow these healthy plants. W

Today I am going to go get the red clay needed for this project and begin gathering seeds. If I have extra at the end I will use them for guerrilla gardening and scatter them on abandoned plots of land throughout the Los Angeles vicinity.

Anyhow I feel confident about my plan as I know it is better than my current garden plan as each year I learn more and develop a better understanding of gardening how-to's. This is not to imply I don't like my current garden as I actually love it but more an understanding of life as it goes with anything. For example when you first learn playing guitar it is hard work and doesn't sound right although with any sort of commitment, practice, and determination, by the end of a few months to a year you are so much better. This is the same for anything in life and is what I am currently experiencing with gardening.

Happy gardens, Tim

8/26/09

Recently I have let the garden do what it wants and haven't tried to control it at all. I am still watering when necessary and harvesting the fruits of my labor but no longer am I trying to make it do what I want it to do. I believe by now the garden will do what it wants and trying to make it do what I want will only perpetuate its demise.

Currently, as has been for a while, the tomatoes are all dying off. While the tomatoes are still coming out and ripening the plants are looking sickly and unhealthy and many of the tomatoes are experiencing root rot. (Well I guess it isn't many but at least one variety (middle right) is experiencing it.) It is important for me to experience this because it teaches me something more about the garden. Furthermore I am a believer in natural farming and thereby don't want to try and control my garden but instead want to help nourish it and let it be healthy.

Today the garden looks beautiful, and there is much produce to be harvested I (i.e., basil, chives, tomatoes, dill fennel, sage, and basically everything else in the garden). Also this

is my last journal document for the summer as I am returning to school on Friday to begin collaborating my summer efforts and turning them into a thesis. This summer's garden was so much fun, it brought so much light to our surroundings (especially the backyard) and was a treat for everyone. Yesterday while I was sitting out looking at the garden I thought to myself WOW how beautiful this truly is. It is completely transformed the backyard and my perception of a lawn. Why would anyone wasn't such a big lawn when they could have a garden in place of it. It is so wonderful to see butterflies, bees, birds, hoverflies, and all other sort of insects that bring so much life to an area of land that currently was so plain. Before the garden we had maybe an occasional butterfly, ladybug, or bumblebee in our backyard and since they have grown exponentially. Sitting back looking at the garden is something that I will never forget. It is also something that I will never stop doing. This project has made me realize what a garden brings to a place – more than just food – it brings, peace, nature, serenity, life, and nourishment; all of which a simple lawn cannot support.

The other day I went to pick up some free mulch from the city of Los Angeles. This stuff wasn't the typical mulch one would imagine but it was dark, steamy, and smelt like some sort of manure. I grabbed my shovel and filled 5 trash bags worth to bring back to my garden. The stuff in it is all of LA's natural trimmings put through a processor and turned into mulch. Therefore it is suspicious to know exactly what is in it and after spreading a thin layer on my garden I began seeing bits and pieces of glass and plastic that I slowly sifted through picking out all of the pieces. The reality of this is sad as anyone who throws garbage in the green dumpsters is actually contaminating this free city mulch – I think everyone has done this at one point in their life. Now I understand more the importance of these green dumpsters and have learned to respect them more. Furthermore, while the mulch may not be the best and not the most satisfactory for an organic garden; I am trying my hardest to create a local, low budget garden in Los Angeles. From my initial compost adventure to my final trip to the city's mulch center I have realized that in terms of FREE garden goods, while, Los Angeles has a lot of it, I think until people begin respecting nature, the stuff is not that suitable for creating a free vegetable garden in ones backyard.

Other than that I know that the way I chose to create a no-dig vegetable garden DOES WORK – This is a testament to that. Hopefully after my next garden (to be planted this fall) is finished the soil will have improved much and I will be helping nature do what it does best –GROW and Create a healthy Environment.

On another note I made some seed balls the other day (around a hundred or so) using alfalfa seeds, strawberry clover, and an arrangement of shade flowers. With the vast majority I did some guerrilla gardening and threw them on a newly abandoned lot in Los Angeles (with the help of my parents). I hope to see that this lot in the future has many plants and begins to turn back to nature rather than partial dirt/cement/etc. Lastly I think I will throw the rest of the seed balls on one part of my garden and see how they do. It is fun experimenting with things and I think that is probably the most important thing about gardening I learned all summer –HAVE FUN.

With so many gardening tricks and tips out there, sometimes the project can feel overwhelming but when one realizes what they are actually doing is something very mundane and simple (trying to make the world a better place) all of the burdens associated with it - Thesis – Grades – School - sort of go out the window and like a seed it can begin to grow.

In the beginning I thought countless hours of planning, studying, and implementing would give me the perfect garden with no issues – and now I realize gardening is more of an art and is something you will never fully learn how to do as it takes a whole lifetime of dedication and we will all still be learning. We can never master anything completely – including a garden-, as we are always students learning more, more, and more. Just think; if I learned everything, how would I continue to live, as learning is something that happens every day, every minute, and every second. In every moment we grow and to finish growing is to finish the moments, that is why I will continue to learn more and more and will never have a perfect anything (including garden) because I will always be able to make it that much better – or learn that much more.

Tim